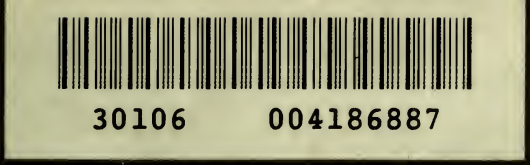

REGIONAL SURGERY

To be Published in Three Parts.

PART II WILL INCLUDE THE TRUNK AND UPPER EXTREMITY.

„ III WILL INCLUDE THE GROIN AND LOWER EXTREMITY.

REGIONAL SURGERY

INCLUDING

SURGICAL DIAGNOSIS

A MANUAL FOR THE USE OF STUDENTS

PART I

THE HEAD AND NECK

BY

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PREFACE

In the following pages an attempt has been made to group together the principal surgical affections which are peculiar to each region of the body.

At the same time considerable attention has been paid to differential diagnosis, and, where practicable, tables have been introduced in which the characteristic symptoms of each disease are arranged side by side.

It will be seen, therefore, that it is the object of this little work, which is intended for the more advanced student, and which requires some previous acquaintance with the principles of surgery, to supplement and not in any way to supplant the various text-books on this subject, in conjunction with which it is intended that it should be read.

I have to thank my friend, Mr. G. A Wright (who has carefully revised the proof-sheets), for much kind assistance, and also for many very valuable suggestions in its complication.

I am also much indebted to my friend, Mr. T. H. Pindar, for kindly revising for me the chapters on Diseases of the Ear.

F. A. SOUTHAM.

96, Mosley Street, Manchester;
October, 1882.

CONTENTS

CHAPTER I

Tumours of Scalp and Vault of Cranium

CHAPTER II

Affections of Scalp and Vault of Cranium

CHAPTER III

Injuries of the Head

CHAPTER IV

Affections of the Face

CHAPTER V

Affections of the Nose

CHAPTER VI

Affections of the Lips

CHAPTER VII

Affections of the Jaws

CHAPTER VIII

Affections of the Teeth

CHAPTER IX

Affections of the Mouth

CHAPTER X

Affections of the Tongue

CHAPTER VIII—*Continued*

CHAPTER XI

Affections of the Palate

CHAPTER XII

Affections of the Gums

CHAPTER XIII

Affections of the Tonsils

CHAPTER XIV

Affections of the Pharynx

CHAPTER XV

Affections of the Œsophagus

CHAPTER XVI

Affections of the Eyelids

CHAPTER XVII

Affections of the Lachrymal Apparatus

CHAPTER XVIII

Affections of the Orbit

CHAPTER XIX

Affections of the Neck

CHAPTER XX

Injuries of the Neck

CHAPTER XXI

Injuries and Affections of the Cervical Spine

CHAPTER XXII

Affections of the Larynx and Trachea

CHAPTER XXIII

The Ear—Affections of the Auricle

CHAPTER XXIV

The Ear—Affections of the External Meatus

CHAPTER XXV

The Ear—Affections of the Membrana Tympani

CHAPTER XXVI

The Ear—Affections of the Middle Ear

CHAPTER XXVII

The Ear—Affections of the Internal Ear

CHAPTER XXVIII

The Ear—Diagnosis of the Cause and Seat of Deafness

ERRATA

Preface, line 18, *for* "complication" *read* "compilation."
Page 17, „ 1, *after* "cellulo-cutaneous" *insert* "erysipelas."
„ 40, „ 24, *for* "tumour" *read* "tumours."
„ 52, margin, *for* "syyhilitic" *read* "syphilitic."
„ 54, line 8, *for* "calculous" *read* "calcareous."
„ 86, „ 15, *for* "mylo-myoid" *read* "mylo-hyoid."
„ 128, „ 9, *for* "entropion (212)" *read* "ectropion (213)."

REGIONAL SURGERY

CHAPTER I

TUMOURS OF SCALP AND VAULT OF CRANIUM

Tumours of Scalp and Vault of Cranium.

1. The tumours met with on the scalp and vault of the cranium may be divided into three great classes, according as they are—

1. *Congenital*, or present at birth.

2. *Traumatic*, or the result of injury.

3. *Acquired* or *Idiopathic*, occurring in after-life as the result of disease or without any apparent cause.

They may also be classified according as they are connected with—

1. The *Scalp*, including the soft structures which overlie the cranial bones. To this subdivision the term "*Dermal*" may be applied.

2. The *Pericranium*. To this subdivision the term "*Pericranial*" may be applied.

3. The *Bones of the Cranium*. To this subdivision the term "*Cranial*" may be applied.

4. The *Brain and its Membranes*. To this subdivision the term "*Cerebral* and *Meningeal*" may be applied.

In the following table the tumours most commonly met with in this region have been arranged according to both these methods of classification:

Table of Tumours of Scalp and Vault of Cranium.

	Congenital.	Traumatic.	Acquired.
Dermal	Sebaceous cyst, 3 Nævi, 4 Moles, 5	Abscess,* 14 Hæmatoma . { Cutaneous, 20*a* Subaponeurotic, 20*b*	Sebaceous cyst, 6. Fungating sebaceous cyst, 6. Abscess,* 14. Enlarged glands, 17. Vascular tumours { Nævi, 7. Aneurism by anastomosis, 7. Cirsoid aneurism, 7. Arterial varix, 7. Fibroma, 19. Lipoma, 18. Gummata, 8. Horns and papillomata, 16. Epithelioma, 17.
Pericranial		Nodes, 23 Pott's puffy tumour, 22 Hæmatoma (subpericranial), 20*c*	Nodes (9) . { Syphilitic, 9 *a*. Rheumatic, 9 *b*. Strumous, 9 *c*. Sarcomata, 10.
Cranial			Exostoses, 11. Sarcomata, 10.
Cerebral and Meningeal	Meningocele, 2 Encephalocele, 2 Hydrencephalocele, 2	Hernia cerebri, 24 Collections of cerebro-spinal fluid, 25	Fungus of dura mater, 13.

* In the above table, abscess is included for diagnostic purposes, though it can hardly be described as a tumour of the scalp. The numbers refer to the Nos. of the paragraphs.

Congenital Tumours.

Meningocele. Encephalocele. Hydrencephalocele.

2. *Meningocele, Encephalocele, Hydrencephalocele* are the terms applied to—

Congenital tumours formed by a protrusion or hernia of the membranes of the brain or the brain itself, through an opening in the skull, either in the line of one of the sutures, or at some spot where the cranial bones are deficient at birth.

In a *Meningocele*, the protrusion consists only of a sac formed by the membranes (dura mater and arachnoid) filled with subarachnoid fluid.

In an *Encephalocele*, the brain itself is contained in the external tumour.

In a *Hydrencephalocele*, in addition to subarachnoid fluid, the brain itself also protrudes to some extent into the external tumour. Another variety of hydrencephalocele is described where, in addition to brain substance, the tumour contains a portion of one or both ventricles filled with fluid.

These tumours form soft, rounded or oval swellings, attached by a broad base, or in some cases by a narrow pedicle, varying from the size of a pea to that of a tumour exceeding the child's head.

When large, the integuments are much thinned and the skin is often of a bluish colour.

Fluctuation is generally present. The tumour increases in size, and becomes more tense on strong expiratory efforts, as when the child cries or coughs; it is partly or entirely reducible within the cavity of the skull, and after reduction the aperture in the bone can be felt. In many cases, cerebral symptoms (from pressure upon the brain) are produced upon their reduction. Pulsation, synchronous with the pulse, can be detected when the tumour consists mainly of brain substance.

In exceptional cases, however, where the aperture to the skull is very small, or where it has become obliterated after birth, the symptoms just described as peculiar to these tumours of intracranial origin may be altogether absent. They may form in the line of any of the sutures, or at any of the fontanelles, but are most commonly situated in the middle line, often at the back of the head just behind the foramen magnum. Another favourite seat is at the root of the nose between the two halves of the frontal bone, or in the temporal fossa near its external angular process.

Much more rarely a protrusion of the membranes of the brain may take place at the base of the skull, causing a swelling at the back and upper part of the pharynx. The same condition has been found at the point of junction of the frontal and ethmoidal bones, the meningocele under these circumstances presenting itself as a tumour on the roof of the nasal fossæ.

Sebaceous Cysts.

3. Small round or oval tumours, often somewhat flattened, and not uncommonly multiple, present at birth, slowly increasing in size, and rarely attaining a greater diameter than about two thirds of an inch, are congenital *sebaceous*, *dermoid*, or *cutaneous cysts*. These tumours have often deep attachments, being connected with the pericranium, in some cases perforating one or both tables of the skull, and not unfrequently lying in contact with the dura mater. Sometimes they contain hair in their interior. Small meningoceles or encephaloceles are very liable to be mistaken for these tumours, but they may be distinguished by the fact that a sebaceous cyst is not reducible, never pulsates, does not increase in size on violent expiratory movements, and is often found in situations where a meningocele could not exist. If pressure upon the tumour causes cerebral

Congenital Tumours.

symptoms it may nevertheless be a sebaceous tumour lying in contact with the dura mater.

Nævi.

4. *Capillary Nævus.*—A slightly elevated or flattish staining of the skin, of reddish, bluish, or purplish colour, is a *capillary nævus* or "mother's mark."

Venous Nævus.—A more or less prominent swelling, soft and puffy to the touch, at times somewhat lobulated, diminished in size on compression, and slowly swelling up again when pressure is removed, without bruit or pulsation, increasing in size during strong expiratory efforts, of a blue or purplish colour, is a *venous nævus*, involving usually both skin and subcutaneous tissue.

This variety of vascular tumour is often of considerable size at birth, and, as the result of external irritation, the skin over it not uncommonly becomes abraded or slightly ulcerated.

The purely venous nævi are usually confined to the subcutaneous tissue, those involving the skin only being always of a capillary nature; where, however, both skin and subcutaneous tissue are implicated, the nævus is generally of the mixed kind, viz. both venous and capillary.

Moles.

5. The scalp is not unfrequently the seat of *moles, i.e.* pigmented spots or patches, varying in size and usually of congenital origin. The patches, which are on a level with the surrounding surface, or more or less raised above it, may be smooth or covered with long hairs, hence the term "nævus pilosus" or hairy mole.

Acquired Tumours.

Moles are liable to undergo various degenerative changes, and may in after-life become the seat of melanotic sarcoma or epithelioma.

Sebaceous Cysts.

6. Movable tumours of slow growth, soft to the touch and at times fluctuating, varying in size from a

Acquired Tumours.

pea to an orange, often multiple, and in many cases hereditary, without pulsation and non-reducible, are *sebaceous*, *cutaneous*, *dermoid cysts* or *wens*. The skin covering them is unaffected, but on attempting to raise it from the tumour a slight dimpling is often observed, and a black point is sometimes present on the summit of the tumour, indicating the opening of a hair follicle, and showing that the tumour was formed by the obstruction of the duct of a sebaceous gland.

In other cases, when no such dimpling or obstruction of a follicle is apparent, the tumour is probably a new formation of a cystic nature, developed in the skin.

The contents of the cyst consist of sebaceous matter, more or less inspissated, mixed with epidermal scales, and not unfrequently crystals of cholesterine are also present.

The acquired form of sebaceous tumour differs from the congenital (3) in its more superficial situation, always being developed in connection with the skin, and lying above the occipito-frontalis or its aponeurosis.

Fungating Sebaceous Cysts.

As the result of some irritation, the skin over a sebaceous cyst may ulcerate and give way, and the contents of the tumour having discharged themselves externally, an irregular growth, consisting of exuberant granulations, may spring from the internal surface of the cyst-wall, and presenting itself externally as a fungating vascular mass, may simulate very closely an epitheliomatous ulcer of the scalp (15).

The diagnosis may be made by attention to the history of the case, viz. by the previous existence of a tumour, probably for some length of time, having all the characteristics of a sebaceous cyst; also by the absence of any infiltration of the margins of the opening, as would be the case in an epitheliomatous ulcer.

Acquired Tumours.

Vascular Tumours.
α. Nævi.
β. Cirsoid Aneurism.
γ. Aneurism by anastosmosis.
δ. Arterial Varix.

7. *Nævi* are generally congenital (**4**) or make their appearance soon after birth. In some cases, however, they are first met with at later periods of life, and then probably they are of traumatic origin.

A large, irregular, compressible, somewhat lobulated, pulsating tumour, with the skin covering it unchanged or thinned, and of a blue or purplish colour, over which a bruit can be heard, with enlarged and tortuous arteries running into it, pressure on which partly arrests the pulsation, situated most commonly in the neighbourhood of the branches of the temporal artery is a vascular or erectile tumour, made up chiefly of enlarged and tortuous arteries. The tumour is termed—

Cirsoid Aneurism when the trunks of the larger vessels are involved.

Aneurism by Anastomosis when the smaller vessels and capillaries are chiefly affected.

Arterial Varix when the trunk of a single vessel (as in the case of a varicose vein) is dilated, tortuous, and lengthened.

8. Solid rounded elevations of the skin and subcutaneous tissue, single or often multiple, and collected into groups, very liable to break down and ulcerate, are syphilitic *gummata*, and along with them there will usually be found other evidences of constitutional syphilis. Gummata.

9. *Nodes.*—A circumscribed swelling, round or oval in shape, soft and doughy, often fluctuating, fixed and immovable, attended by more or less pain, which is often worse at night, is a local periostitis or node, which may be due to syphilis, rheumatism, struma, or injury. Nodes.

The *syphilitic node* is the most common variety, and α. Syphilitic.

may occur in either the secondary or tertiary stage of the constitutional affection.

In the *secondary* node, the periosteum, thickened and inflamed, is raised up and separated from the bone by a more or less fibrinous effusion. Along with this there is generally associated some inflammation of the surface of the bone itself. The simple inflammatory swelling thus formed may become absorbed and disappear, or it may ossify and remain as a permanent periosteal thickening, sometimes termed a "syphilitic exostosis."

In the *tertiary* node there is, in addition to simple periostitis, a deposit of gummatous matter in and upon the surface of the bone, which is very liable to soften and break down, exposing a carious or necrosed condition of the bone itself.

Syphilitic nodes are often multiple, and usually attended by considerable pain, which is worse at night.

b. Rheumatic. The *rheumatic node* is a much rarer affection than the preceding; it is usually single, and unattended with much pain, even at night. It is softer and more fluctuating than the syphilitic variety. The cranium is the favourite seat of this form of local periostitis, which is due to simple inflammatory thickening of the periosteum and fibrinous effusion between it and the bone.

c. Strumous. The so-called "*strumous*" *node* differs from the preceding varieties in the fact that it is hardly ever a purely periosteal swelling. In this form there is thickening and expansion of the osseous tissue itself, but the swelling is chiefly due to infiltration of the periosteum and superjacent soft tissues with inflammatory exudation, which is very prone to break down, exposing a soft and carious condition of the bone.

A variety of strumous node is described as due to a

Acquired Tumours.

circumscribed deposit of tubercle outside the bone, but this condition is very rare.

10. The bones of the cranium are sometimes the seat of sarcomatous growths, which may spring either from the bone or periosteum. Sarcomata.

Periosteal Sarcomata usually appear as rapidly growing tumours connected with the exterior of the bones of the skull. They are commonly multiple, and, though the neighbouring lymphatic glands usually escape, they are soon followed by secondary growths in internal organs, rapidly destroying life. *a.* Periosteal.

Central Sarcomata usually appear as rapidly growing tumours springing from the diploë of the cranial bones. They closely resemble the preceding in their rapid course and fatal termination, but differ in the fact that the primary growth is rarely multiple, and is usually found in somewhat older subjects. *b.* Central.

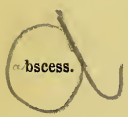
11. Smooth globular tumours, hard to the touch and perfectly immovable, springing from the cranial bones, causing generally no pain, of small size, slow growth, and often multiple, are *ivory exostoses.* Exostosis.

This growth may be distinguished from the "syphilitic exostosis," or periosteal node that has undergone ossification, by the absence of any inflammatory symptoms, by its slower progress, and by its uniform hardness throughout its whole course.

12. *Fungous Tumours of the Dura Mater, or Perforating Tumours of the Skull.*—Under these titles are described cancerous and simple growths growing from the membranes of the brain, mainly from the dura mater, and perforating the skull, distinguished by the imperfect pulsation they receive from the subjacent brain or from their own rich vascular supply, and also by the cerebral symptoms which they produce Fungous Tumours of the Dura Mater.

from pressure, such as headache, epileptiform convulsions, &c.

Probably many of the growths formerly described under this name are sarcomatous tumours, springing from the diploë of the bone, or which, originating either from the dura mater or pericranium, penetrate the skull either from within or without, and subsequently present themselves externally as more or less fungating tumours.



Abscess.

14. A soft, fluctuating, more or less rapidly forming swelling, preceded by symptoms of inflammation, which will vary in intensity according as the process is of an acute or chronic character, is probably an *abscess*.

If superficial to the tendon of the occipito-frontalis, the suppuration is usually limited in extent, forming a well-defined swelling; but if beneath, it may (as in the case of extravasation of blood) spread widely in the loose areolar tissue between the aponeurosis of the muscle and the pericranium.

In many cases an abscess of the scalp is due to some cause of local irritation, *e.g.* pediculi, or it may form as the result of injury, or without any apparent cause; when occurring in syphilitic subjects, it is often due to the softening and breaking down of a gummatous deposit (**8, 9** *a*.) When situated behind the ear, an abscess may be due to suppuration of a lymphatic gland (**17**), or to disease of the mastoid process (**361**). When at the back of the scalp, it may be connected with the occipital lymphatic glands (**17**).

Epithelioma.

15. *Epithelioma* may attack the scalp in the form of a foul ulcer with a hardened base, raised and irregular surface, and prominent, everted and indurated edges. After a time the neighbouring lymphatic glands become enlarged and nodular, and the surrounding parts be-

coming gradually involved, the subjacent bone may subsequently become implicated in the disease.

The characteristic appearance of the ulcer, the history of the case, and in many cases the age of the patient (usually over 40), will usually serve to distinguish epithelioma from a fungating sebaceous cyst (6), with which affection it is liable to be confounded.

16. The scalp may become the seat of "*horns*" or *warty growths.* These structures usually result from the drying up of the contents of a sebaceous cyst, which has either ruptured spontaneously or been burst accidentally; in other cases they resemble more the structure of a simple wart or *papilloma.* Horns. Papillomata.

17. *Enlargement of the Lymphatic Glands* at the back of the head along the attachment of the occipito-frontalis (occipital), or behind the ear at the upper end of the sterno-mastoid (posterior auricular), is often seen and may be due to numerous causes (246, 247, 248). Enlarged Glands.

The inflammation, to which the enlargement is most commonly due, and which may be either of an acute or a chronic nature, may gradually subside, or it may go on to suppuration and the formation of an abscess (14).

18. *Lipomata* or *Fatty Tumours* are sometimes met with on the scalp, most commonly in the occipital region and at the back of the neck (268.) Lipoma.

19. *Fibromata, Molluscum Fibrosum,* or small tumours consisting of a simple outgrowth of the connective tissue elements of the skin, are sometimes met with at the posterior part of the scalp and back of the neck. Fibroma.

The little tumours, which are often multiple, are at first sessile, but as they slowly increase in size they become pedunculated and pyriform in shape; they are usually of softish consistence, and are covered by normal skin. They generally occur in adults, giving rise to no

Tumours of Traumatic Origin.

pain or inconvenience, except from the deformity they produce.

Hæmatomata or Blood Tumours.

20. *Extravasation of blood* occurring in the scalp may take place in one of three situations, viz.

α. Cutaneous—in the integument superficial to the aponeurosis of the occipito-frontalis tendon.

β. Subaponeurotic—in the loose cellular tissue beneath the occipito-frontalis, between the muscle or its tendon, and the pericranium.

γ. Subpericanial—between the pericranium and the bone.

α. Cutaneous.

When extravasation of blood occurs in the dense cellular tissue which connects the skin to the occipito-frontalis and its tendinous aponeurosis, it is usually limited in extent, presenting itself as a small, well-defined, more or less hard unyielding swelling.

β. Subaponeurotic.

When extravasation takes place in the loose cellular tissue between the tendon of the occipito-frontalis and the pericranium, owing to the laxity of the tissue in this situation, it is usually much more widely spread, in some cases extending over one side or even the whole of the scalp, the swelling being generally most prominent in the temporal region. This variety most commonly occurs in children as the result of a fall or blow. When limited, the fluctuating swelling which is formed may simulate an abscess, from which, however, it may be distinguished by the absence of any symptoms of inflammation, and also by the history of the case.

γ. Subpericranial.

The blood-tumour, which is formed in the cellular tissue between the pericranium and bones of the skull, usually occurs in new-born children as the result of pressure upon the head during delivery.

Owing to the connection between the pericranium and the subjacent bones being especially strong at the

different sutures, this form of extravasation is generally confined to a single bone, and is bounded by a distinct ridge. It is most commonly situated over one of the parietal bones, occasionally over both, and is more frequent in male than female children. The tumour generally increases in dimension for the first few hours after birth, and may reach the size of a small orange. It is not unlikely to be confounded with a meningocele or encephalocele (2), but may be distinguished by its usual situation, viz. over one of the parietal bones and not at a fontanelle, or in the line of a suture, by the absence of pulsation, by no increase in size occurring during violent expiratory efforts, and also by its non-reducibility on pressure.

The term *cephalhæmatoma* is often made to include the different varieties of blood-tumour occurring on the scalp, but by some writers it is applied only to the subpericranial variety.

Diagnosis of Hæmatoma from depressed fracture of skull.

21. When a blood tumour of the scalp has existed for some time, it often becomes bounded at its margin by a hard ridge or raised border formed of thickened tissue and inflammatory exudation; under these circumstances the soft centre, surrounded by a raised and hardened margin, may simulate a fracture of the vault of the skull with depression of the fragments.

The diagnosis between the two affections may be made as follows:

Diagnosis of Hæmatoma from Depressed Fracture of Vault of Skull.

Hæmatoma.	*Fracture.*
1. The margin bounding the depression is raised above the level of the surrounding surface of the skull.	1. The margin of the depression is on a level with the surrounding surface of the skull.
2. The margin is rounded, and on pressing the finger-nail upon it an impression can often be made.	2. The margin is sharp and irregular, and upon pressure no impression can be made upon it.
3. The outline is regular, and often crescentic.	3. The outline is very variable, often irregular.
4. The apparent depression within the ridge will probably yield sufficiently to the pressure of the finger, so that the smooth surface of the skull can be felt below.	4. If any bone can be felt at the bottom of the depression it will be loose and irregular.
5. No symptoms of compression of brain.	5. Cerebral symptoms probably present.

Pott's Puffy Tumour.

22. A circumscribed "puffy" tumour forming upon the scalp some days after the receipt of an injury (which may or may not have been accompanied by external wound), attended by symptoms of inflammation of the brain or its membranes, terminating in coma or paralysis, generally indicates the presence of pus between the bone and dura mater at the seat of injury.

The puffy swelling upon the uninjured scalp, or in the neighbourhood of the external wound, when one is present, is the result of a localised periostitis excited by the injury, and the inflammation thus excited extending inwards, and involving in succession the diploë

Tumours of Traumatic Origin.

and inner table, is generally followed by intracranial suppuration (*i. e.* between the bone and dura mater).

Nodes.

23. A circumscribed swelling connected with the bone and periosteum, attended by considerable pain, worse at night, appearing on the cranium shortly after the receipt of an injury, is a traumatic node, the result of a localised inflammation of the periosteum.

Hernia Cerebri.

24. A fungating mass, often pulsating synchronously with the brain, consisting of cerebral substance, more or less mingled with inflammatory products, following laceration or sloughing of the dura mater, the result of a compound fracture of the skull, or the removal of a portion of the skull-cap with a trephine for injury or disease, is a *hernia cerebri* or protrusion of the brain.

It is termed a *false* hernia cerebri when the protruded mass consists mainly of inflammatory exudation and granulation tissue, and *true* hernia cerebri when it is composed chiefly of real cerebral substance.

Collections of cerebro-spinal fluid.

25. A small fluctuating swelling, situated upon some part of the vault of the cranium, in some cases exhibiting slight pulsation, more or less completely reducible, varying in size from time to time, but generally becoming larger and more tense during violent expiratory efforts or on lowering the head, usually occurring in children, and following an injury to the head, generally unaccompanied by any external wound, is a *collection of cerebro-spinal fluid* beneath the tissues of the scalp.*

This condition is generally the result of a simple fracture of the vault of the skull, whereby the subarachnoid space, or possibly one of the ventricular cavities of the brain having been laid open, the cerebro-spinal fluid escapes through the crack or fissure in the bone, and gives rise to the localised swelling beneath the tissues

* Clement Lucas, 'Guy's Hospital Reports,' 1876, 1881.

Tumours of Traumatic Origin.

of the scalp. In some cases the edges or margins of the fissure through which the fluid escapes can be felt through the scalp in the neighbourhood of the tumour.

If the swelling is explored with a fine trocar, a clear liquid will be extracted, presenting the usual characteristics of cerebro-spinal fluid.

CHAPTER II

AFFECTIONS OF SCALP AND VAULT OF CRANIUM

Erysipelas. *a.* Phlegmonous.

26. *Phlegmonous* or *Cellulo-cutaneous.*—A hot, tense, painful swelling of the scalp, spreading rapidly over the whole or greater part of the head, and often involving the face, attended by considerable œdema, showing a great tendency to terminate in suppuration and sloughing of the soft structures, so that the pericranium is often destroyed and the bone exposed, accompanied by rigors and severe constitutional disturbance, is phlegmonous or cellulo-cutaneous erysipelas, probably appearing in connection with some injury to the scalp.

b. Cutaneous.

Cutaneous.—When of an idiopathic nature, viz. occurring without any external wound, the cutaneous tissues only are often involved, and under these circumstances the affection generally runs its course without being attended by formation of pus.

Necrosis. Sinus.

27. A sinus, or unhealthy ulcerated surface, discharging fetid pus, with the surrounding soft parts thickened, infiltrated, and undermined, leading down to bare bone, which can be detected with a probe, is found in cases of necrosis of the bones of the cranium, the result probably of syphilis, struma, or some injury which has been followed by destruction of the periosteum, and consequent death of the subjacent bone.

Osteoid thickenings round anterior fontanelle.

28. Thickenings of the cranial bones, especially parietal and frontal, most marked at the margins of the

anterior fontanelle, and producing more or less distinct prominences in this situation, occurring in young children the subjects of congenital syphilis, usually within the first two years of life, are due to syphilitic osteitis, the substance of the bone itself being involved, as well as that of the periosteum covering it.

In many cases there are four of these little bosses or prominences round the anterior fontanelle, separated from one another by the coronal and sagittal sutures. From the supposed resemblance to the "nates," the term "*natiform eminences*" is sometimes applied to the little elevations or thickenings of the bones of the skull produced in this way.

The thickenings of the frontal bone continuing may, at a later period of life, produce the peculiar and characteristic protuberance of the frontal eminences, which is so diagnostic of hereditary syphilis (**47**).*

Craniotabes.

29. Abnormal softening of portions of the occipital and parietal bones, causing them to yield to moderate pressure and impart to a finger pressed upon them a sensation like that derived from stiff parchment or from the surface of a bladder, is *craniotabes*, or extreme thinning, followed in some cases by perforation of the bones of the skull, the result of the pressure of the brain and the counter-pressure of the pillow upon the softened and spongy osseous tissue.

This condition is sometimes found in young children the subjects of rickets, but by some it is looked upon as an evidence of congenital syphilis.†

Rodent Ulcer.

30. The scalp is sometimes the seat of rodent ulcer, the general appearance of which is described in Table (**44**).

* Parrot, 'Brit. Med. Journal,' vol. i, p. 789, 429.

† Ibid.

Sinus over Mastoid Process.

31. A sinus behind the ear, discharging pus and leading down to bare bone, is often found in cases of disease of the mastoid process (**361**). In other instances, it may simply be the result of non-closure of the cavity of an abscess which has formed in the soft tissues, or in connection with the lymphatic glands in this situation (**14**).

Shape of Cranium in Rickets.

32. We find two types of head associated with rickets.

In some cases it is of a square shape, as though flattened on its superior, lateral, and antero-posterior aspects, so that the forehead and parietal protuberances are unduly prominent (**33**).

In other cases it is long and narrow, as though compressed from side to side, the forehead projecting and its antero-posterior diameter being unusually lengthened.

At the same time we find that the sutures and fontanelles are late in closing, and craniotabes (**29**) is occasionally present.

Hypertrophy Cranium.

33. *Hypertrophy*, or enlargement and thickening of the bones of the cranium, may be due to various causes. It may be dependent upon simple chronic inflammatory changes, the result of injury, syphilis, or struma; or it may be due to rickets, ostitis deformans, leontiasis ossea. It is also produced in some cases of osteomalacia.

a. Rickets.

In *Rickets* the bones of the cranium, especially the parietal and frontal eminences, are often much thickened, and consequently unduly prominent (**32**), owing to the development of new osseous tissue from the deeper layers of the periosteum.

b. Ostitis deformans.

In *Ostitis deformans** the cranium very slowly and

* Paget, 'Medico-Chirurg. Trans.,' vol. lx.

Hypertrophy of Cranium.

gradually increases in size, owing to thickening of the bones entering into its formation. The bones of the face generally remain unaffected, retaining their normal condition. At the same time the normal curvatures of the vertebral column gradually become much exaggerated, so that the patient's stature is considerably diminished, while the spine itself becomes stiff and rigid (**308** *c*).

The long bones of both upper and lower extremities enlarge and soften, becoming in many instances unusually curved and misshapen.

This affection, which appears to be of a chronic inflammatory nature, is very rarely met with before middle life. It runs a very slow course, usually lasting for many years.

A curious feature in connection with it is that malignant disease (especially cancer or sarcoma attacking some portion of the skeleton) eventually shows itself in a large proportion of the subjects of this affection.

This condition differs from leontiasis ossea in two important points:—1st, in the more advanced age of the patients; 2nd, in the fact that the facial bones are not involved.

c. Leontiasis ossea.

In *Leontiasis ossea*,* a very rare affection, which is generally met with in early life, sometimes in young children, the bones of the cranium and, in addition, those of the face (and in some cases those of the extremities also), becoming greatly thickened and enlarged (**108**).

In consequence of these changes, the cavity of the cranium is greatly contracted, and when the bones of the face are involved (in which respect it differs from ostitis deformans) the orbits, antrum, frontal sinuses,

* Paget, 'Medico-Chirurg. Trans.,' vol. lx.

Hypertrophy of Cranium.

and nasal fossæ, gradually become encroached upon, so that after a time these cavities are often found more or less completely obliterated.

d. Osteomalacia.

In certain cases of *Osteomalacia* the bones of the skull are after death found to be thickened, irregular in structure, and very porous, presenting a peculiar mortary appearance.

Hypertrophy of the cranium, due to thickening of its bones, must not be confounded with the enlargement or expansion of its cavity, dependent upon chronic hydrocephalus (**34**).

Hydrocephalus.

34. In *Chronic hydrocephalus*, owing to accumulation of fluid in the ventricles of the brain and subarachnoid space, the cranial bones become expanded and thinned, sometimes to such an extent as to yield a crackling sensation on pressure; the fontanelles and sutures are at the same time widened out and rendered unduly prominent, so that in many cases fluctuation can be distinctly felt.

The head is consequently much enlarged and the forehead projects; the eyeballs protrude, owing to pressure from within upon the orbital plates of the frontal bone.

In comparison with the size of the cranium, the lower part of the face looks unusually small. Hydrocephalus is either congenital or comes on soon after birth, and is in many cases found associated with rickets.

Cutaneous Affections

35. The scalp is not unfrequently the seat of one of the following affections: in two instances, Tinea tonsurans and Tinea favosa, the condition is dependent upon the presence of a vegetable parasite.

Eczema.

In *Eczema* the eruption consists of irregular groups of small vesicles situated on patches of inflamed skin;

these bursting, discharge their contents and form scabs and yellowish crusts, by which the hairs are matted together.

Impetigo.

In *Impetigo* the eruption consists of numerous small pustules, grouped together in clusters, which burst and form thick scabs and incrustations, glueing together and entangling the hair. In many cases the eruption is accompanied by enlargement of the cervical glands, and appears to be due to the irritation caused by the presence of pediculi.

Eczema impetigi-nodes.

The connection between eczema and impetigo is a very close one, and by some impetigo is regarded as a pustular form of eczema. A combination of the two affections is not at all uncommon, the pustules of the former being often present along with the vesicles of the latter.

Pityriasis.

In *Pityriasis* the scalp is covered by an increased formation of very fine epidermic scales, like those of bran, which are readily rubbed off and fall in the form of scurf or fine powder. There is no thickening or apparent inflammation of the cutis, as in psoriasis, and the affection is of an entirely superficial character.

Psoriasis.

In *Psoriasis* the skin, which is somewhat thickened and inflamed, is covered with raised patches of dry white epidermic scales. It is distinguished from eczema, with which it is somewhat liable to be confounded, by the fact that the thickened patches are simply made up of proliferating epidermic scales, and not of dried-up secretion, as is the case in that affection.

Herpes zoster.

An eruption of vesicles on slightly-inflamed patches of skin, arranged in groups, often preceded by a sensation of heat and local pain of a neuralgic character, situated upon one side of the forehead, and following

the course of the frontal nerves, is an instance of *Herpes zoster* or "*Shingles*" (H. frontalis).

Alopecia syphilitica.

Along with other symptoms of constitutional syphilis, and most commonly during the earlier stage, the hair of the scalp, becoming dry and withered, comes away in large quantities, and leaves the patient more or less completely bald. Pityriasis is often present at the same time, the shedding of the hair being often accompanied by superficial desquamation of the epidermis.

Tinea tonsurans or Ringworm.

In *Tinea tonsurans*, or ringworm, there are round or oval, slightly elevated patches on the scalp, covered with fine white scales, upon which the hairs, rendered dry and brittle by the invasion of the fungus, have been broken off close to the skin.

The patches tend to increase in size, spreading at their circumference, and in some cases reach considerable dimensions. The disease, which is usually found in children, is due to the presence of a vegetable parasite, the *Tricophyton tonsurans*, the spores and tubes of which will be seen if the scales or hairs are examined under the microscope.

Tinea favosa.

In *Tinea favosa* portions of the scalp are covered with small, yellow, cup-shaped crusts, each of which contains a hair in its centre. As the disease progresses the crusts, increasing in size and becoming confluent, produce large, irregular, thickened yellowish masses, which on their removal leave somewhat ulcerated surfaces. In some cases a peculiar offensive odour is perceived, like that of mice or cat's urine. This affection, which is most common in children, is only occasionally met with in this country; it is due to the presence of a vegetable parasite, *Achorion Schonleinii*, and if the yellow scabs or crusts are examined microscopically they

will be found to be made up of the spores and tubes of the fungus.

Tinea decalvans or Alopecia areata.

In *Tinea decalvans* or *Alopecia areata* there are round or oval patches of baldness, from which the hair is completely removed. The patches are distinguished from those of Tinea tonsurans by the fact that the skin is perfectly smooth, and not covered by fine epidermic scales and short truncated hairs, as in that disease. It is said to be due to a vegetable parasite, the *Microsporon Audouini*, but in most cases the presence of the fungus cannot be detected.

CHAPTER III

INJURIES OF THE HEAD

Contusion.

36. As a consequence of some local injury without external wound, blood may be effused in small quantity into the tissues of the scalp, producing an ecchymosis or simple bruise; when, however, the injury is followed by considerable extravasation of blood, a hæmatoma or blood-tumour (**20**) is formed.

Scalp-wounds.

37. Wounds of the scalp may involve only the soft structures which enter into its formation, or they may be complicated with fracture of the skull; owing to the extreme vascularity of the scalp they are often accompanied by considerable hæmorrhage, and when the external wound is of small size, as in the case of a simple puncture, the blood may accumulate in considerable quantity beneath the tissues of the scalp.

Fractures of Skull.

38. *Fractures of the Skull* may be divided into fracture of the vault and fracture of the base, or, again, into fracture of the vault and base combined.

a. Fractures of Vault.

Fractures of the Vault may be simple or compound, that is, without or with external wound; they may be classified as follows, according as one only of the tables, or as the whole thickness of the skull is involved.

1. Fracture of the outer table only. This form, in which the outer table only is depressed and driven into the diploë, is most common in the neighbourhood of the frontal sinuses, where a considerable depression may be

produced without the inner table being in any way injured.

2. Fracture of the inner table only, without any injury to the outer table, is a rare injury; it may be accompanied by depression of the fragments.

3. Fracture of the whole thickness of the skull—the most common variety—may occur under various forms, viz.

a. Simple cracks or fissures—when there is no displacement of the fragments.

b. Fracture with depression—when one or more of the fragments is driven inwards.

c. Fracture with elevation—when one or more of the fragments is forced outwards; this is of very rare occurrence.

d. Comminuted fracture — when there is extensive splintering of the fragments.

e. Punctured fracture—when the injury being caused by a pointed instrument, the outer table is merely perforated, and the inner one extensively splintered and often depressed.

f. Starred fracture—when there are numerous fissures radiating from a common centre.

g. Gutter or saucer-shaped fractures—where the injury having been caused by a blunt instrument the bone is depressed in a gutter or saucer-like shape, the depression being greater at the centre than at the circumference.

In some cases, viz. in young children, where the bones are soft and pliable, the vault of the skull may be indented and driven in without being accompanied by any actual fracture beyond a slight yielding or giving way of the substance of the bone, a kind of so-called, *green-stick* fracture being produced.

Fractures of Skull.

Simple fissures and fractures without displacement of the fragments may be unattended by any symptoms, but when the fracture is complicated with displacement, symptoms of compression of the brain are generally present, and when there is an external wound, the fissure or depressed portion of bone can generally be seen or felt with the finger.

Simple extravasation of blood, bounded by a raised and thickened margin, with an apparent depression in its centre, is very liable to be confounded with a fracture with displacement inwards of the fragments; for the diagnosis between these two affections, cf. **21**.

b. Fracture of Base.

Fracture of the Base may occur without any external wound, but is, in the majority of cases, a simple extension downwards of a fracture of the vault, which may be either simple or compound.

1. Anterior Fossa.

1. *Anterior Fossa.*—In fractures of the anterior fossa, when the orbital plate of the frontal bone is involved, there is extravasation of blood into the cellular tissue of the eyelids and orbit. This extravasation is distinguished from that attending an ordinary "black eye" (**46**) by its being more in the ocular and less in the palpebral conjunctiva, and also by its being most marked as it passes backwards towards the posterior part of the orbit.

Persistent epistaxis is often present, the blood escaping through a fissure in the roof of the nasal fossa, and indicating a fracture through the ethmoid or body of the sphenoid bone.

Hæmatemesis is often present, owing to blood which has been swallowed being rejected by the stomach.

Paralysis of the nerves of the orbit may also be produced.

Fractures of Skull.

Discharge of a clear watery fluid (cerebro-spinal) from the nostrils is very rarely present (**88**).

2. Middle Fossa.

2. *Middle Fossa.*—In fractures through the middle fossa involving the petrous portion of the temporal bone, hæmorrhage from the ear is often present, owing to rupture of the membrana tympani and escape of blood from one of the vascular channels at the base of the skull which has been wounded in the fracture (**351**).

Discharge of clear watery fluid from the ear is often associated with the hæmorrhage, and is due to escape of cerebro-spinal fluid, owing to the prolongation of arachnoid which accompanies the seventh pair of nerves having been laid open, when the fracture involves the internal auditory canal (**352**).

Paralysis of the facial nerve and deafness are often present (**58**).

3. Posterior Fossa.

3. *Posterior Fossa.*—Fractures involving the posterior fossa are often followed by extravasation of blood in the neighbourhood of the mastoid process, or in the occipital region, or at the side of the neck; in many instances there will be tenderness on pressure over the mastoid process, and when the mastoid cells are involved emphysema may be also present (**277**).

Complications of Injuries to the Head.

39. Any injury of the head, whether it be a simple contusion, scalp wound, or fracture of the skull, may be followed by symptoms of *concussion* or *compression of the brain.*

Concussion.

Concussion.—By concussion of the brain is meant the state of shock or nervous depression which follows an injury to the head, and which in some cases is said to depend upon simple disturbance of the cerebral circulation, while in others it is attended by some visible lesion of the brain or its blood-vessels (contusion of brain substance or minute extravasations of blood).

Compression.—Compression of the brain may be produced in several ways, *e. g.* from the presence of— Compression.

1. Depressed bone.
2. Blood extravasated upon the surface of the brain or its membranes, or into its substance.
3. Pus formed within the skull.
4. Foreign bodies lodged within the skull.

In the following table the main points of diagnosis between concussion and compression are laid down :

Table showing Chief Points of Distinction between Concussion and Compression of Brain.

Diagnosis of Concussion and Compression.

	Concussion.	Compression.
Onset of symptoms	Immediately after the receipt of the injury	If due to extravasation of blood, the injury is immediately followed by symptoms of concussion; these may pass off, and then after an interval of more or less perfect consciousness, those of compression set in; or, without any return of consciousness, the symptoms of concussion may speedily pass into those of compression. If due to depressed bone, pus, or foreign bodies cf. (39; 2, 3).
Mental faculties	Partial insensibility: patient can be roused to answer questions	Complete or profound insensibility.
Respiration	Quiet, shallow, irregular	Slow, laboured, stertorous.
Pulse	Quick, weak, irregular or intermittent	Slow and full.
Skin	Cold and clammy	May be cool, but often hot and perspiring.
Temperature	Lowered	Normal or increased.
Pupils	Often contracted: sensible to light	Dilated or unequal: sluggish or insensible to light.

Diagnosis of Concussion and Compression.

	Concussion.	Compression.
Bladder	Not paralysed; but owing to relaxation of its sphincter, there is often an involuntary flow of urine	Paralysed, therefore retention of urine is often present, followed after a time by incontinence, the result of overflow from a distended bladder.
Bowels	There is no paralysis; but owing to relaxation of the sphincter ani, there are often involuntary discharges of fæces	Paralysis of sphincter ani is present, and as a result involuntary evacuations often occur; or the bowels may be torpid and constipated.
Vomiting	Often comes on as the symptoms of concussion pass away	Not generally present.
Voluntary muscles	Not paralysed, though often flaccid and much relaxed. Sphincters not paralysed, but simply relaxed	Paralysed, generally on one side of the body, and opposite to that which is the seat of compression. Sphincters are completely paralysed.

Diagnosis of Compression.

Compression of the Brain may, as previously stated, be due to several causes, *e. g.*:

1. Extravasated Blood.

1. *Extravasation of Blood* upon the surface of the brain or its membranes, or into its substance.

a. Meningeal.

a. When *Meningeal*—viz. when the extravasation takes place upon the surface of the brain or its membranes, without laceration of its substance, the symptoms of compression come on after an interval of consciousness more or less complete. The injury is followed by symptoms of concussion, from which the patient more or less perfectly recovers; then, after an interval of consciousness, symptoms of compression set in, and as these increase in severity he falls into a state of coma, more or less profound, accompanied by general paralysis or hemiplegia of

Diagnosis of Compression.

the side opposite to that which was the seat of injury.

β. When *Cerebral*—viz. when the hæmorrhage is dependent upon laceration of some portion of the brain, and when the extravasation takes place into its substance, the interval of consciousness does not occur, but the symptoms of concussion are speedily followed by those of compression. In these cases the patient is generally restless and excited; the paralysis is usually incomplete, and convulsive movements and twitching of the limbs are often associated with it, affecting chiefly the side of the body opposite to that which is the seat of the cerebral lesion.

β. Cerebral.

2. *Depressed Bone* or a *Foreign Body.*

When due to the presence of depressed bone or the lodgment of a foreign body, the symptoms of compression are present from the first, following the injury at once without any interval of consciousness.

2. Depressed Bone or Foreign Body.

3. *Pus* formed within the skull.

When due to the presence of pus, the symptoms of compression come on a considerable time after the receipt of the injury, often not for ten or fourteen days, and are preceded by symptoms of inflammation of the brain or its membranes, *e.g.* considerable pyrexia, great heat of head, hot skin, quick pulse, flushed face, pain in the head, intolerance of light and sound, and more or less delirium. Rigors often occur in the later stages of the inflammatory process, and are usually diagnostic of the commencement of suppuration.

3. Pus.

When present, Pott's puffy tumour (22) is a valuable indication of the formation of pus within the skull.

CHAPTER IV

AFFECTIONS OF THE FACE

Acne vulgaris.

40. The face is a favourite seat of Acne vulgaris, a disease of the skin, most common about the age of puberty, characterised by the appearance of small tubercles or pustules, the result of obstruction of the sebaceous glands and effusion into the skin around them. It is termed:

Acne punctata—when the retained secretion ("comedo"), acting as an irritant, excites only a slight amount of inflammatory redness.

Acne indurata—when in addition to redness, there is a considerable amount of exudation round the tubercles.

Acne pustulosa—when suppuration takes place at the apex of the tubercles.

Acne rosacea—when the tubercles are accompanied by considerable hyperæmia of the surrounding skin, due to injection of the capillaries, producing a red, shining, greasy appearance. This form is most commonly seen on the nose, whence it may extend to the adjacent parts of the cheek.

Acne hypertrophica is a more advanced form of the last condition, accompanied by considerable hypertrophy of the surrounding tissues, as a result of which the nose becomes much enlarged and covered with tuberculated and pendulous masses. To this condition, most com-

monly seen in those of intemperate habits, the term "*Lipoma nasi*" is sometimes applied.

41. The face, most commonly in children, is sometimes the seat of small pedunculated or sessile tumours, varying in size from a pin's head to a pea, which present on their summit a small depression, the orifice of a sebaceous gland, and from which, when the tumour is squeezed, a soft white substance is forced. Molluscum contagiosum.

This condition, which is due to hypertrophy of the sebaceous glands, and not to retention of secretion, as in the case of acne, appears in some cases to be of a contagious nature.

42. The face is a favourite seat of the different forms of lupus, the cheeks and alæ nasi being the parts most commonly affected. Lupus.

Lupus non-exedens is characterised by an eruption of pale or reddish tubercles, covered with white scales or scabs, which on coming away leave behind a smooth, white depressed cicatrix; this form is most common on the cheeks.

Lupus exedens.—In this form, the tubercles break down and ulcerate, giving rise to the presence of the lupoid ulcer, the characteristic appearance of which is described in table, p. 34.

Lupus erythematosus begins generally as a reddish patch upon the nose, whence it extends to the cheeks, covered with scales or thin crusts, and seldom ulcerating, but leaving a superficial white scar, which is often permanent. Extending in this manner, the characteristic "butterfly" appearance is produced, the patches on the cheeks representing the wings, and that on the nose the body of the butterfly.

This variety of lupus is usually met with at a more advanced age than the preceding forms, viz. gene-

Table showing Differential Diagnosis between Lupoid Ulcer, Rodent Ulcer, and Epithelioma.

	Lupoid Ulcer.	Rodent Ulcer.	Epithelioma.
Age	Young people	Elderly people, usually those advanced in life	Elderly people.
Situation	Alæ nasi, at junction of skin and mucous membrane, a favourite situation	Usually at some spot in the upper $\frac{2}{3}$ of face; the skin of the lower eyelid a favourite situation	Usually at the junction of skin and mucous membrane, *e.g.* eyelid, nose, or lip; lower lip the most favourite situation.
Origin	Preceded by the tubercles of lupus, which break down and ulcerate	Commences as a solitary indolent tubercle, which, after a time, shows a tendency to ulcerate	Commences often as a small hard tubercle, which soon cracks and ulcerates.
Ulceration	Spreads slowly, healing at one part and breaking down at another; may be superficial, or may extend deeply, destroying the parts beneath, *e.g.* the cartilages of nose.	Spreads slowly, gradually invading the deeper structures, exposing and often destroying the bones of the face	Gradually extends, the infiltration of the skin and subjacent structures being followed by ulceration.
Edges of ulcer	Sharp, irregular and eroded; sometimes slightly raised and thickened: the characteristic tubercles of lupus are generally present in the neighbourhood of the ulcer	Smooth, hard, rounded, sinuous, and "rolled-over"	Prominent, everted, indurated, and irregular.

Base of ulcer	Covered with granulations secreting pus, which often scabs upon the surface	Smooth, glossy, half-dry and cleanish	Hard, nodular, and irregular; much indurated and often secreting a foul purulent discharge.
Tendency to heal	Generally present, causing cicatricial contraction of the skin, which often produces considerable deformity, *e.g.* ectropion	None, as a general rule	None.
Glandular implication	None	None	Nearest set of lymphatic glands become, after a time, enlarged and indurated.
Pain	Absent	Absent	Often present.
General health	Often in connection with the strumous diathesis	Good; the patient often enjoys the most perfect health	At first unaffected; after a time the peculiar cachexia associated with malignant disease appears.

rally in middle life, and most commonly in the female sex.

Leprosy.

43. In the tubercular form of leprosy, "*Lepra tuberosa*," an affection rarely seen in this country, the face often becomes studded over with small round tubercles, varying in size from a small pea to a nut. The nose, cheeks, forehead, lips, and chin are all liable to become affected, as a result of which the countenance is much altered, giving rise to the presence of the so-called "facies leontina."

Ulceration.

44. *Ulceration of the Face* may be due to *Lupus*, *Rodent ulcer*, *Epithelioma*, *Syphilis*, or *Struma*. In the table, p. 34, the differential diagnosis between lupoid ulceration, rodent ulcer, and epithelioma is laid down.

Syphilitic.

As one of the later symptoms of constitutional syphilis, ulceration of the face is not unfrequently met with, the result of the breaking down of the tubercular syphilides, or of gummatous deposits in the skin and subcutaneous tissue.

In the former case, the tubercles breaking down and ulcerating form multiple, more or less circular sores, which, when they heal, leave behind indelible white scars. To this form the term syphilitic lupus is sometimes applied. When due to the softening and breaking down of gummatous deposits in the subcutaneous tissue, the ulceration extends more deeply, leaving a circular sore, which looks as if the skin had been punched out over it.

Strumous.

In strumous children ulceration of the face is not uncommon, especially in connection with an eczematous condition of the surrounding skin. The ulceration is generally of a superficial and irregular character, with undermining of the edges of the sore; the pus usually scabs on its surface, and in many cases healing takes

place without the formation of any scar. This condition is often associated with enlargement of the lymphatic glands in the neck, and the patient usually shows other evidences of the strumous diathesis (71). Ulceration.

45. Children, the subjects of congenital syphilis, often present a peculiar, scarred and fissured condition of the cheeks, most marked at the angles of the mouth, the relics of the cutaneous eruptions from which they suffered during infancy. Cicatrices round Mouth.

46. The ecchymosis or bruising of the eyelid, "black eye," the result of a direct blow upon the part, must be distinguished from the effusion of blood into the same region, which follows a fracture of the base of the skull. Contusion of Eyelid "Black-eye."

In the case of fracture, the palpebral effusion is preceded by ecchymosis of the ocular conjunctiva, and appears some time after the receipt of the injury. It is entirely subcutaneous, and is probably unattended by any bruising of the eyelid.

In the case of a simple contusion there is more or less bruising of the skin, and the ecchymosis is chiefly into the cutaneous tissue. If it is accompanied by ecchymosis of the ocular conjunctiva, this is most marked at the anterior part of the eyeball in the neighbourhood of the cornea, fading gradually away as it passes backwards out of sight, just the reverse of what occurs when it is due to a fracture of the base (38).

47. Children, the subjects of congenital syphilis, often present a remarkable bulging or prominence of the frontal eminences, due to thickening of the frontal bone, the result of ostitis and periostitis during infancy (28). Prominence of Frontal Eminences.

48. Swelling and undue prominence of the cheek may be due to a *contusion* or *bruise*, or it may depend upon the presence of an *abscess* confined to the soft tissues, arising spontaneously, or forming in connection with Prominence of Cheek.

carious teeth (cf. *Alveolar abscess*, 111) or necrosed bone (112).

Or, it may be due to some *affection of the superior maxilla* pushing forwards the cheek, *e.g.*

Suppuration within the antrum (110).

Hydrops antri (cystic degeneration of the mucous lining of the antrum) (104).

Solid or cystic tumours springing from the superior maxilla (104—109).

Sinus.

49. A fistulous opening, surrounded or covered over by projecting granulations, and discharging unhealthy pus, is probably a *sinus* leading down to necrosed bone (112), or the fang of a carious tooth (111).

Salivary Fistula.

50. A fistulous opening over the parotid gland, or in the course of Steno's duct, discharging clear saliva or a mixture of saliva and pus, is a *salivary fistula*, produced as the result of some obstruction in the course of the duct, *e.g.* a salivary calculus, or in consequence of some wound or ulcerative process by which the gland or its duct has been laid open.

Abscess.

51. A soft, fluctuating swelling, preceded and accompanied by symptoms of inflammation, is probably an *abscess*, which may arise spontaneously or as the result of injury, or form in connection with carious teeth (111) or necrosed bone (112).

Erysipelas.

52. A rapidly-spreading, hot, red, painful condition of the skin, accompanied by more or less œdematous swelling, which is often considerable when the loose areolar tissue of the eyelids becomes involved, preceded by rigors and attended by considerable elevation of temperature, not unfrequently followed by the formation of vesicles or blebs, is an attack of *facial erysipelas*, which may arise spontaneously or extend from a wound on the face or scalp.

If idiopathic it very commonly commences in the neighbourhood of the nose, whence it spreads, often involving the whole face and part of the scalp (26).

53. A swollen and indurated condition of the cheek or lip, of a dusky red colour, quickly followed by phagedænic ulceration and sloughing of its whole thickness, which in some cases may extend deeply and involve the gums and bones of the jaw, occurring in ill-nourished and weakly children, and often following one of the eruptive fevers, is *cancrum oris*, a form of gangrene which is peculiar to childhood. Cancrum oris.

54. A painful, acute inflammatory swelling, preceded or accompanied by the formation of a small vesicle or pustule, commencing usually in the upper lip and rapidly extending to the face, associated with great constitutional depression, is a *facial carbuncle*. This form of carbuncle, which is usually found in young people between fifteen and twenty-one years of age, is often accompanied by phlebitis or thrombosis of the facial veins, and this condition, often extending to the cerebral sinuses, death not unfrequently results from an acute form of blood-poisoning. Facial Carbuncle.

55. *Malignant Pustule* or *Charbon*, a contagious disease communicated to man from the bodies or skins of animals that have died of splenic fever, not uncommonly attacks the face, or any part of the body exposed to inoculation. Malignant Pustule or Charbon.

It commences as a small papule at the seat of inoculation, which soon develops into a vesicle, and this after gradually enlarging bursts, and discharges a clear or bloody fluid.

At the seat of the original vesicle a dry, darkish-coloured slough forms; this soon becomes surrounded by a ring of vesicles, which run a precisely similar

course, so that in this way the central dark slough gradually increases in size until it reaches the dimensions of a shilling, or even larger.

The surrounding tissue is indurated and inflamed, assuming a vivid, purplish-red colour, and the adjacent lymphatic glands become enlarged and painful.

The constitutional symptoms vary in severity: in some cases they are entirely absent, while in others there is high fever, with great prostration and delirium. In many instances (unless the affected part is freely excised in the early stage) death occurs in four or five days, or even less, from a very acute form of blood-poisoning.

The prominent symptoms of this affection are the comparative absence of pain, the dry character of the central black slough, which is not accompanied by any formation of pus, the fact that the sloughing commences in the skin, and thence extends to the subcutaneous tissue, and not in the reverse direction, as is the case in carbuncle, and the very fatal character of the affection, which in many cases speedily destroys life from septic poisoning.

Nævi.

56. The face is very frequently the seat of *nævi*, or vascular tumour, which in many cases attain a considerable size, and may then cause much disfigurement. All three varieties are met with, viz. the capillary or "mother's mark," the venous, and the mixed form, where both skin and subcutaneous tissue are involved (**4**).

Sebaceous Cyst.

57. The cheek is not unfrequently the seat of the simple *sebaceous cyst* (**6**), especially in male subjects, in whom it is often developed in the hairy part of the face, just in front of the ear.

Facial Paralysis. "Bell's Palsy."

58. In paralysis of either facial nerve, the affected side of the face is smooth, motionless, and void of ex-

pression; the eyelids are widely separated, and cannot be closed; there is dropping of the angle of the mouth and often dribbling of saliva, while on the unaffected side, to which it appears to be drawn, its angle is raised. Articulation is often impaired, the patient is unable to blow or whistle, and mastication is interfered with, owing to the food collecting between the gum and cheek. In some cases there is perversion of taste, with slight *thrusting* of the tongue and pointing of the uvula to the affected side.

This condition may be the result of—1. Organic mischief in the brain. 2. Injury or disease affecting the nerve in its course through the temporal bone. 3. Causes affecting the nerve after its emergence from the stylomastoid foramen, *e. g.* injury, pressure from tumours, exposure to cold, &c. The diagnosis of the condition on which it depends may be made by attention to the following points:

1. In cerebral disease, the muscles of the eyelid generally escape, those only of the lower part of the face being affected. In all the other forms, the whole side of the face is paralysed. Hemiplegia is often present, affecting the opposite side of the body.

2. If due to disease of the temporal bone, deafness and otorrhœa are usually present. If due to fracture of the base of the skull, involving the petrous portion of the temporal bone, there will be a history and other evidences of injury (38).

It is only when the nerve is implicated in its course through the temporal bone that the palate and tongue are affected.

3. If the nerve is affected after its emergence from the stylomastoid foramen, some cause of pressure is obvious, or there is a history of injury or exposure to cold.

Facial Spasm. "Convulsive Tic."

59. Clonic spasm of a portion or the whole of the muscles supplied by the facial nerve is sometimes seen, giving rise to contortion and twitching of the affected side of the face. This condition may be due to some cerebral affection or to reflex irritation of the facial nerve, and the attacks, which usually come on in paroxysms, are unattended by any pain, and generally disappear during sleep.

Evidence of Congenital Syphilis.

60. Children or young adults, the subjects of congenital syphilis, often present a peculiar physiognomy, the chief characteristics of which are—

Prominence of the frontal eminences (47).

Imperfect development and depression of the bridge of the nose (72).

Opacity of the cornea, due to interstitial keratitis.

Pits and scars on the face and forehead, cicatrices and fissures on the cheeks and at the angles of the mouth (45).

Malformation of the permanent teeth, especially the central incisors of the upper jaw (123).

Deafness is also often present (363).

If the roof of the mouth is examined, it is often found to be extremely arched, presenting a dome-shaped appearance (151).

Affections of Frontal Sinuses.

a. Distension.

61. *Distension of the Frontal Sinus* by retained mucus or pus is sometimes seen, giving rise to a prominent swelling at the upper and inner margin of the orbit above the level of the tendo-oculi, and causing displacement of the eyeball in a downward, outward, and forward direction.

This condition may be the result of an injury or of inflammatory changes, in consequence of which the communication (infundibulum) which normally exists between the frontal sinus and middle meatus of the

Affections of Frontal Sinuses.

nose becomes closed; or it may depend upon some morbid condition of the sinus itself, *e.g.* the presence of polypi, hydatids, cystic or other forms of tumours.

It may be either of an acute or a chronic character.

When *acute* the distension is generally due to the presence of pus, which, accumulating in its interior and perforating its bony walls, may discharge itself either externally at the inner margin of the orbit, or internally into the nose. This condition is attended by considerable pain of an acute or dull aching character, along with redness, tenderness, and swelling of the eyelids and soft tissues about the inner canthus.

When *chronic* the distension is, as a rule, simply due to the accumulation of secretion, which may remain pent up for a considerable period without giving rise to any symptoms except the presence of a swelling at the inner and upper margin of the orbit, which causes a gradual displacement of the eyeball.

This condition is liable to be mistaken for distension of the lachrymal sac (**222**).

b. Exostoses.

The frontal sinuses are occasionally the seat of *ivory exostoses*, which, in some cases having very narrow attachments, are liable to undergo spontaneous fracture at their base, and thus they may be found lying loose in the interior of the air-cells in this situation. To this variety of bony tumour the term "*enostosis*" is sometimes applied. Similar growths are sometimes found in the interior of the antrum (**108**) and nasal fossæ (**87**).

c. Polypi.

The frontal sinuses are sometimes the seat of *polypi*, which, as above described, may give rise to "distension." In other cases they may cause a clear discharge from the nostril (**83**).

d. Fracture.

Fractures involving the frontal sinus may be gene-

rally easily recognised by the displacement due to depression of the outer table and by the presence of bony crepitus. Considerable emphysema, due to the escape of air from the sinuses into the subcutaneous tissue, is often present in the neighbourhood of the fracture, forming a more or less diffused puffy swelling, which imparts to the finger a crepitant or crackling sensation (68).

Affections of Parotid Gland.

Simple Tumours.

62. A firm, hard, nodular, well-defined swelling, situated below and behind or in front of the lobe of the ear, stationary or of very slow growth, with deep attachments, but somewhat movable beneath the skin, which may be thinned over it, but is not adherent, with no enlargement of the neighbouring lymphatic glands, is a simple tumour, probably a fibro-enchondroma or fibro-myxoma, connected with one of the lymphatic glands which lie over the parotid in this region, or springing from the fibrous capsule or substance of the gland itself.

As the tumour slowly increases in size, it may dip down deeply into the substance of the gland, more or less displacing it, and often sending prolongations beneath the ramus of the jaw; at the same time it may cause paralysis of the face on the affected side from pressure on the facial nerve, and not unfrequently difficulty of mastication and deafness are also produced.

The growth, which may consist of pure cartilage, fibro-cartilage, or a mixture of fibro-cartilage and imperfectly formed glandular tissue, is usually invested with a tough capsule of connective tissue, which in many cases is intimately connected with the surrounding structures. These tumours are, as a rule, of a simple nature, not returning if completely removed.

Malignant Tumours.

63. The parotid gland may become the seat of sarcoma-

tous or carcinomatous growths, which show themselves as infiltrations of the substance of the gland itself. In either case the tumour is of a more or less rapid growth, deep-seated, and immovable, with ill-defined outline. As it increases in size, surrounding parts become infiltrated and incorporated with the new growth, serious pressure effects being produced. The skin covering it becomes adherent, discoloured, and the seat of ulceration, and, in the case of cancer, the neighbouring lymphatic glands become at the same time enlarged, points of importance as serving to distinguish between the simple and malignant varieties of tumour found in this situation.

Parotitis or Mumps.

64. Pain or swelling in one or both parotid regions, with stiffness of the neck, accompanied by slight febrile disturbance, and occurring usually in children, is *parotitis* or *mumps*, a contagious inflammatory affection of the parotid gland, which may occur sporadically or prevail as an epidemic.

The swelling gradually extends from below and in front of the ear (the situation of the parotid), along the side of the neck, as the submaxillary and sublingual salivary and the neighbouring lymphatic glands generally become secondarily involved. In the course of a few days the swelling gradually subsides, it being very rare for suppuration to occur. "Metastasis" occasionally takes place, that is to say, the inflammation may suddenly leave the parotid and attack the testicle, or more rarely the mammary gland.

Abscess or Parotid Bubo

65. *Inflammation of the Parotid Gland* is not uncommon as a complication or sequela of some of the eruptive fevers, *e. g.* typhus, variola, scarlatina; more rarely, it may occur idiopathically or in the course of a case of pyæmia; under these conditions suppuration very often takes place, differing in this respect from

what occurs in parotitis or mumps (64). If an abscess forms in its substance, it is always accompanied by severe pain, owing to the pus being confined and bound down by the firm fascia which covers the parotid gland, and for the same reason it cannot readily point or come to the surface, but has a tendency to burrow in various directions.

Mastication is always much interfered with, and the general symptoms are of a low adynamic type. The shape of the swelling, which corresponds with the situation of the parotid, viz. in front of and below the ear, its unilateral position, its tendency to go on to suppuration, the previous history of the case, and in many cases the age of the patient, will serve to distinguish this condition from simple parotitis or mumps occurring in children, with which it is liable to be confounded.

Congenital Malformation of Mouth.

66. Excluding the different varieties of fissure of the lips (94), the mouth is liable to the following congenital malformations, viz.—

a. Microstoma congenitum.

a. Microstoma congenitum, or contraction of the orifice of the mouth, may be present at birth, and in many cases the deformity is associated with a defective development of the inferior maxilla.

b. Atresia oris.

b. Atresia oris, or complete absence of the mouth, a condition somewhat analogous to imperforate anus, is of extremely rare occurrence.

Cicatricial Narrowing of Mouth.

67. *Contraction of the Orifice of the Mouth* is often produced as the result of cicatrisation in the case of burns or wounds involving the lips or cheeks and accompanied by much loss of tissue; also in the case of extensive ulceration or destruction of the parts, *e. g.* lupus, cancrum oris, &c.

Emphysema.

68. *Emphysema* of the face, due to the escape of air

into the subcutaneous connective tissue, and giving rise to considerable swelling of the parts, especially about the eyelids and loose areolar tissue in the neighbourhood of the orbit, may be due to a fracture of the bones of the face involving some of the sinuses or air-cavities, *e. g.* frontal sinus, antrum, ethmoidal cells, nasal fossa, or it may be due to extension of the same condition from the neck or chest (**277**). The nature of the swelling is usually very characteristic; it has a peculiar puffy appearance, and is soft and compressible, communicating to the finger pressed upon it a crackling or crepitant sensation.

Œdema of Face.

69. Œdema of the face, which presents a dull white, puffy and pasty appearance, pitting on pressure, is often an early and prominent symptom in *chronic renal disease.*

a. Renal Disease.

The œdema, which is generally most marked in the loose areolar tissue of the eyelids and beneath the orbit, varies from time to time, being generally most apparent in the early morning.

b. Myxœdema.

Œdema of the face, which presents a swollen, semi-transparent, waxy appearance, with in many cases a delicate blush on the cheeks, not pitting on pressure, most marked about the eyelids, and lips, which present a peculiar thickened appearance, usually occurring in middle-aged females, is seen in *myxœdema**. This affection is by some supposed to be due to chronic kidney disease, but inasmuch as the urine is, at least for a considerable time, generally found to be normal and free from albumen, and nervous symptoms are often present, it is by others believed to be the result of "a cretinoid state coming on after adult life in women."

* Ord, 'Medico-Chirurg. Trans.,' lxi. Mahomed, 'Lancet,' vol. ii, 1881, p. 1079.

The œdema, which is more or less general and forms so characteristic a symptom in the disease, is of a solid nature (differing from that which is present in the common forms of Bright's disease by not pitting on pressure), and appears to be due to an excess of mucin in the subcutaneous tissue, which is itself swollen and hypertrophied.

Morphœa.

70. The face is a favourite seat of *Morphœa* or *Addison's keloid*, a rare affection of the skin characterised by the presence of smooth, well-defined, waxy-like patches of a pale pink or yellowish colour, and supposed to be due to some affection of the vaso-motor nerves.

The patches, which are abruptly limited by the middle line of the face, and which often follow the course of the supra-orbital or other branch of the fifth nerve (as in herpes zoster, **35**), are not associated with any alteration in cutaneous sensibility, though slight tingling and tenderness on pressure are sometimes present.

In some cases the skin, fascia, and subjacent muscles all become adherent and bound down, in consequence of which the countenance becomes fixed and rigid, and a peculiar corpse-like appearance is produced.

This affection, arising spontaneously, must not be confounded with the *keloid of Alibert*, which forms on the cicatrices of burns or any other extensive and slowly healing wound, and which presents itself in the form of gigantic tubercles, or nodular, elevated patches, of oval or fusiform shape, sending out claw-like processes, at first of a red or pinkish colour, but gradually, as they extend, tending to become pale.

Strumous or Scrofulous Diathesis.

71. *Struma* or *Scrofula* is the term applied to a constitutional diathesis, either hereditary or acquired, in

Strumous or Scrofulous Diathesis.

Evidences in the Face.

which there is a tendency to inflammation of a low type, that is to say, it is characterised by a "condition of the body or of certain portions of the body in which inflammations are easily excited, in which they tend towards suppuration and ulceration, and in which the power of spontaneous recovery is very feeble."*

The parts most frequently involved in scrofula are the *skin*, *mucous membranes*, *lymphatic glands*, *bones*, and *joints*. Two forms of scrofula are described, the *sanguine* or *serous* (identical with the so-called tubercular diathesis) and the *phlegmatic* or *melancholic* (or scrofula proper).

Evidences of the characteristics distinctive of these two types will usually be found in the face.

Table showing the Characteristic Features of the two Types of Struma.

	Sanguine.	Phlegmatic.
Shape of face	Oval	Round and plump.
Skin	Thin, clear and transparent, the veins often showing through	Thick, pasty, muddy.
Complexion	Oftener dark than fair	Usually fair.
Expression	Bright, sharp and animated	More or less dull, heavy, and apathetic.
Eyes	Bright and often dark; eyelashes long and silky	Large and full; usually pale.
Nose	Sharp and long; alæ contracted	Large; alæ thick, nostrils open and dilated.
Lips	Thin	Thick, especially the upper.
Teeth	White, often brittle (125)	Soon decay (125).
Lower jaw	Small and angular	Large and broad.
Hair	Fine and silky; often dark; not over-abundant	Generally fair, thick and coarse.

The majority, however, of so-called "strumous sub-

* Butlin, "Scrofula and Tubercle," 'International Encycl. of Surg.,' p. 241.

jects" belong to a medium type between the two just described. "Such a type would include what is known as '*pretty struma.*' The general features of individuals, so termed, belong to the so-called 'phlegmatic' type; but the coarseness of the features is toned down; the lips would be called 'full,' not tumid, and a coarse flabbiness would subside into a pretty plump condition of the body. The skin may not be thin and fine, but it is soft, white, and clear. The general expression is not absolutely apathetic, but would be termed rather gentle and eminently feminine."*

The various affections to which the parts about the head and neck are commonly liable in these so-called strumous or scrofulous subjects are as follows:

1. *Skin.*—Various eruptions on the scalp and face: eczema, impetigo, lichen, lupus, ulceration of face (**44**). Eczema of the auricle and skin behind it. Otorrhœa (**350**). Strumous ulcerations (**272**), scars (**273**), and sinuses (**271**) about the neck.

2. *Mucous membranes.*—Eye: tinea tarsi (**195**), strumous ophthalmia, ulceration of cornea.

Nose: catarrhal inflammation, chronic thickening (**83**), ulceration (**79**), coryza (**77**), ozæna (**78**).

Lip: ulceration (**95**), hypertrophy (**102**).

Mouth and pharynx: catarrhal inflammation, stomatitis (**127**), strumous pharyngitis (**176**).

3. *Glands.*—Lymphatic of neck: adenitis, acute or chronic (**247**, **248**), often going on to formation of abscess (**256**).

Tonsils: hypertrophy (**170**)

4. *Bones.*—Necrosis of nasal bones (**80**), superior or inferior maxilla (**112**), caries of cervical vertebra (**304**) so-called "strumous nodes" on vault of cranium (**9**).

* Treves, 'Scrofula and its Gland Treatment,' p. 88.

CHAPTER V

AFFECTIONS OF THE NOSE

72. *Depression* or *flattening* of the bridge of the nose may result from several causes. Depression of Bridge of Nose.

1. It may follow a fracture with displacement of the nasal bones (**76**).

2. It is often found in children or adults, the subjects of congenital syphilis, the nasal bones being imperfectly developed, as a result of extension of inflammation during infancy from the mucous membrane lining the nasal fossæ to the periosteum covering their internal surface (**77**). In these cases other symptoms of congenital syphilis will be usually present (**60**), and the child will have suffered from "snuffles" during early infancy.

3. It also not uncommonly appears in the later stages of acquired syphilis as the result of ulceration and destruction of the cartilaginous septum, vomer, nasal, or palate bones.

73. *Expansion* of the bridge of the nose due to displacement of the nasal bones from pressure within the nasal cavity, producing the condition termed "frog's face," is generally due to the presence of a fibrous or malignant polypus (**84**). It is less commonly found in cases of mucous polypi (**84**). Expansion of Bridge of Nose.

74. *Destruction* of the nose may result from lupus exedens, rodent ulcer, epithelioma, or syphilitic ulcera- Destruction of Nose.

tion. In extreme cases the whole organ may be destroyed, a gaping chasm remaining, in which the remains of the septum and turbinated bones are plainly exposed to view.

Hypertrophy of Nose.

74 *a*. *Hypertrophy of Nose.*—"Lipoma nasi" (cf. 40).

Lupus. Syphilitic Ulceration. Rodent Ulcer. Epithelioma.

75. The nose is a favourite seat of *Lupus exedens* (42, 44), *Lupus erythematosus* (42), and *Syphilitic ulceration* (44). It is less commonly attacked with *Rodent ulcer* (44) and *Epithelioma* (44). The latter, when attacking the nose, usually commences at the nostril, just at the junction of the skin and mucous membrane. The former generally appears in the skin at a little distance from its junction with the mucous membrane.

Fracture of Nasal Bones.

76. *Fracture of the Nasal Bones* is usually accompanied by some depression of the bridge of the nose, and in many cases considerable deformity results.

Coryza.

77. *Coryza* is the term applied to an excessive discharge of mucus or "running" from the nose.

It may depend upon simple catarrhal inflammation of the Schneiderian mucous membrane, upon chronic thickening, upon strumous or syphilitic affections, or upon the presence of a polypus.

Persistent coryza, or "snuffling," occurring in young infants, is one of the earliest symptoms of congenital syphilis.

So long as the discharge is not accompanied by fœtor the term "coryza" is applied, but when it is attended by an offensive odour the term "ozæna" is employed.

Ozæna.

78. *Ozæna* is the term applied to a more or less thick, purulent discharge from the nostrils, attended by an offensive odour. It may depend upon various conditions, *e. g.* chronic catarrh of the Schneiderian mucous membrane (83).

Ozæna.

Ulceration of the mucous membrane of the nose, simple, strumous, or syphilitic (79).

Caries or necrosis of the nasal bones (80).

Ulceration of the cartilage (92).

The presence of foreign bodies (81), rhinolithes (82), polypi (84).

Suppuration within the antrum, where the pus drains away through the opening into the nasal fossæ (110).

Idiopathic or constitutional. In some cases, with the exception of slight congestion and thickening of the mucous membrane, there is no apparent or assignable cause for the foul discharge, and it is then termed "idiopathic."

Ulceration of Schneiderian Membrane.

79. *Ulceration of the Mucous Membrane* lining the nasal fossæ may occur as one of the symptoms of struma or syphilis; or it may be due to lupus; or dependent on the presence of a foreign body; or follow one of the exanthemata.

There is generally a purulent discharge from the nostril (ozæna), and if the interior of the nose be examined with a speculum the mucous membrane will appear swollen, congested, and the seat of ulceration.

Necrosis of Nasal Bones.

80. *Necrosis of the Nasal Bones* may occur as the result of struma, syphilis or injury. It is usually accompanied by a fetid, purulent discharge from the nostril (ozæna), and on examination with a probe, bare bone will probably be detected.

Foreign bodies in Nose.

81. *Foreign Bodies* are not unfrequently passed into the nasal cavity in the case of children, and if allowed to remain often give rise to a foul discharge, exciting inflammation of the mucous membrane, ulceration, and even necrosis of the nasal bones. In all cases of obstruction and discharge from the nostrils occurring in children, the possibility of the symptoms being due to

the presence of a foreign body should be borne in mind, especially if the affection is unilateral.

Rhinolithes or Nasal Calculi.

82. *Rhinolithes* or nasal calculi are sometimes found, most commonly in the inferior meatus. In most cases they form round some foreign body, which serves as their nucleus. Less commonly they form spontaneously, apparently as the result of some alteration in the nasal secretion, which leads to deposition of calculous matter. The symptoms they produce are very similar to those of a foreign body (81).

Chronic thickening of Mucous Membrane.

83. *Chronic thickening of the Mucous Membrane*, more especially that covering the inferior turbinated bone, is not uncommon, especially in strumous children. The symptoms of this affection, viz. chronic discharge from the nostril, impairment of the sense of smell, and more or less obstruction to respiration, may render it very liable to be mistaken for a polypus (84); but on examination with a speculum, the nature of the obstruction, due to general hypertrophy of the mucous membrane, which is more or less reddened, swollen, and covered with secretion, will be at once recognised, presenting, as it does, an appearance very different to that which is found in the case of polypus.

Meningocele of Nasal Fossa.

83 *a*. In very rare instances a meningocele (2) may present itself on the roof of the nasal fossæ.

Polypi.

84. The nasal fossæ are not unfrequently the seat of abnormal growths of various kinds, to which the term *polypus* is applied.

Three great varieties of polypi are described:—1. The *mucous* or *gelatinous*. 2. The *fibrous*, including *fibro-sarcoma* and pure *sarcomata*. 3. The cancerous.

1. Mucous or Gelatinous.

The presence of the *mucous or gelatinous polypus* (the variety most commonly met with) is usually marked by a constant discharge from the nose, with more or less

obstruction to breathing, the patient being unable to blow through the affected nostril, and the voice acquiring a nasal intonation. On directing the patient to blow down the affected side the greyish, semi-translucent, glistening surface of the polypus can generally be distinguished, in many cases without the use of a speculum.

In the following table the main points of distinction between the two first varieties, those most commonly met with, are laid down.

Differential Diagnosis of Mucous or Gelatinous and Fibrous Polypi.

Diagnosis of Mucous and Fibrous Polypi.

	Mucous or Gelatinous.	Fibrous (including Sarcomata).
Origin	Mucous membrane covering middle or inferior turbinated bones	Periosteum of roof of nasal fossa, or base of skull behind the posterior nares; less frequently from the septum (93).
Structure	Myxomata or fibro-myxomata, often containing adenoid elements	Fibrous tissue, or imperfectly formed fibrous tissue mingled with sarcomatous elements, or pure sarcomata.
Number	Usually multiple	Usually single.
Shape	Pear-shaped, pendulous, and pedunculated, with a narrow base	Irregular, with a broad base, moulding itself to the cavity in which it is contained.
Colour	Greyish, semi-translucent and glistening	More or less red, opaque, and fleshy.
Consistence	Softish	Firm and resistant.
Hæmorrhage	Not often present	Frequently occurs; often a prominent symptom.
Discharge	Constant thin mucoid discharge	More scanty and sanious, liable to become foul and ozænic.

Differential Diagnosis, &c.—continued.

	Mucous or Gelatinous.	Fibrous (including Sarcomata).
Influence of weather	"Hygrometric" in character; in dry, warm weather they contract, and the symptoms are alleviated; in damp weather they enlarge, and the symptoms are aggravated	Undergo no change of volume with changes in weather.
Progress	Slow and stationary	Tend to increase in size more or less rapidly.
Deformity	Sometimes produced; less common than in fibrous. Slight expansion and flattening of nose may be present, and epiphora (224) from obstruction of the nasal duct	Often considerable from expansion of bridge of nose (73); epiphora (224) often present from pressure upon the nasal duct. May encroach on cavity of mouth depressing palate, or growing into antrum may expand it and produce prominence of the cheek or other deformity (cf. below, naso-pharyngeal and naso-orbital polypus).

2. Fibrous or Sarcomatous.

In the preceding table the characteristic features of the *fibrous* or *sarcomatous polypi* have been given; in many cases they are of an essentially malignant nature, as their removal is often impracticable; or if removed, they speedily return, and eventually destroy life from pressure effects, either by interference with respiration and deglutition or from implication of the nervous centres.

Several varieties of fibrous polypi are described *e. g.*:

Polypi.

a. Naso-pharyngeal.

Naso-pharyngeal — when the polypus grows downwards and backwards into the pharynx, appearing behind and pushing forwards the soft palate, at the same time that it makes its way anteriorly into the nasal fossa.

b. Naso-orbital.

Naso-orbital—when penetrating the inner wall of the orbit, the growth makes its way into the interior of that cavity, and causes more or less displacement of the eyeball, generally in a downward and outward direction. Sight will be more or less interfered with, and on examining the interior of the nostril on the same side it will be found to be obstructed by the growth, which will be readily recognised.

3. Cancerous.

Carcinoma, usually of the encephaloid variety, may grow in the form of a polypus from the mucous membrane lining the nasal fossa; it is generally to be recognised by its very rapid growth, its extensive infiltration of the adjacent cavities and structures, and the great deformity it produces; it is usually accompanied by severe hæmorrhage, and the growth often projects from the nostril as a fungating bleeding mass, the neighbouring lymphatic glands are involved at an early period of the disease, evidences of the cancerous cachexia soon appear, and life is speedily destroyed.

Conditions simulating Polypi.

85. The other affections of the nasal cavity which are liable to be mistaken for polypi are—

Chronic thickening of the mucous membrane (**83**).

Deviation of the septum to either side (**89**).

Abscess (**91**), blood tumours (**90**), or other tumours (**93**) of the septum.

Cartilaginous (**86**), or osseous tumours (**87**) of the nasal fossa.

Enchondroma.

86. *Enchondromata*, or cartilaginous tumours, are sometimes found in the interior of the nasal cavity,

springing, as a general rule, from the septum, to which they are attached by a broad base. They are usually of slow growth, firm consistence, and often cause considerable displacement of the septum.

Osteoma.

87. *Osteomata*, or osseous growths, are very rarely found in the interior of the nose, springing either from its bony walls or invading it from without.

In some cases they are found lying quite loose in the nasal fossa, like the exostoses, which are occasionally found detached in the antrum (**108**) and frontal sinus (**61**).

Chronic Discharge from the Nostril.

88. A chronic discharge from the nostril may be due to several causes.

If purulent, it is termed ozæna (**78**).

If thin and mucoid, it is probably due to the presence of a polypus (**84**), or some morbid condition of the mucous membrane lining the nasal fossa (cf. Coryza, **77**).

If perfectly clear and watery, presenting the reaction of cerebro-spinal fluid, and following the receipt of an injury to the head, it shows that a fracture has taken place through the cribriform plate of the ethmoid bone, through the fissure in which the cerebro-spinal fluid constantly drains away. Under these circumstances it will probably have been preceded by a history or symptoms of fracture through the anterior fossa of the base of the skull (**38**).

In rare cases a constant and copious discharge of a clear, colourless, watery fluid, free from smell, and containing little or no albumen, is met with from the nostrils, the interior of which is, on examination, found to present a perfectly normal condition. The fluid, which at times may be so abundant as to flow in an almost continuous stream, is probably secreted by the lining membrane of the antrum or frontal

sinus, and is sometimes associated with the presence of a polypus, or with some morbid condition of the mucous membrane lining the interior of these cavities* (106, 61).

Adenoid Vegetations.

88 *a.* "*Adenoid Vegetations in the Naso-pharyngeal Cavity*" † is the term applied to little growths or vegetations, which, though they may spring from any part of the mucous lining of the naso-pharynx with the exception of the septum nasi, are most commonly found situated on its upper and posterior walls. The growths, which are often vascular and bleed readily on slight irritation, vary in size and shape, appearing either cristate, cylindrical, or flat and sessile.

They appear to be due to simple hypertrophy of the glandular or adenoid tissue in this situation, and the condition is generally found associated with thickening and hypertrophy of the surrounding mucous membrane.

If few in number and of small size, they may give rise to no symptoms whatever; if exuberant and plentiful, blocking up more or less completely the nasal fossæ, considerable impediment will be offered to respiration. The voice is altered, becoming thick and losing its resonance in the naso-pharynx. Hearing is often affected, owing to the Eustachian tubes being more or less obstructed by the presence of the growths about their orifices. In severe cases, owing to the fact that the patient is compelled to constantly breathe through the mouth, the nose after a time somewhat collapses, becoming thin and compressed.

On digital examination of the naso-pharynx from the mouth the vegetations can often be felt as softish

* Paget, 'Clinical Society's Transactions,' 1879. Spiers, 'Lancet,' 1881, vol. i, p. 369.

† Meyer, 'Medico-Chirurg. Trans.,' vol. liii.

masses, sometimes "like a bunch of earthworms," hanging down from the roof of the pharynx, and more or less completely blocking up the posterior nares.

Affections of Septum Nasi.

1. Deviation.

89. *Deviation of the Septum* to either side may occur as a congenital malformation or as a result of injury, causing more or less constriction of the corresponding nostril and consequent obstruction to respiration; on examination of the nostril the nature of the deformity, which in extreme cases might lead one to suspect the presence of a polypus, will at once be apparent.

2. Blood Tumour

90. *Blood Tumours of the Septum* generally occur as the result of injury, and are often accompanied by fracture of the septum. They may be confined to one or appear on both sides of the septum, and, if of considerable size, may offer considerable obstruction to breathing.

3. Abscess.

91. *Abscess of the Septum*, acute or chronic, may result from injury or form spontaneously; it usually appears as a painful, more or less prominent, fluctuating swelling, causing obstruction to respiration, and being in many cases followed by perforation of the septum. The situation of the swelling and other symptoms will readily distinguish it from polypus, with which it may be confounded.

4. Perforation and Destruction.

92. *Perforation of the Septum* is not uncommon as the result of syphilitic ulceration of the mucous membrane covering it, or of abscess of the septum; more rarely it is found in strumous subjects, and in these cases it is sometimes due to lupus attacking the interior of the nose.

Workmen exposed to the vapour of bichromate of potash are liable to a peculiar form of perforation of the septum, which in some cases leads to its complete destruction ('Bichromate Disease'*).

* Richardson, 'Lancet,' 1882, vol. i, p. 397.

The presence of a perforation is sometimes indicated by an unpleasant whistling sound when the patient speaks, and on examination of the nostril, the opening in the septum will generally be apparent.

Tumours.

93. The septum is sometimes the seat of cartilaginous tumours (**86**), or of sarcomatous growths (cf. Polypi, **84**).

CHAPTER VI

AFFECTIONS OF LIPS

Congenital Fissure.

1. Harelip.

94. 1. *Harelip* is the term applied to a congenital fissure or cleft through the upper lip, the result of an arrest of development.

Simple or *Single.*—When the cleft is on one side only of the mesial line, corresponding with the line of union of the intermaxillary and superior maxillary bones, it is termed simple or single harelip.

Double.—When the cleft is on each side of the middle line, it is termed double harelip. In these cases the nose is usually depressed and the nostrils widened, and between the two clefts a small projection is found, formed by the intermaxillary bones, which, remaining in a rudimentary condition, have failed to unite with the superior maxilla.

In many cases harelip is associated with a cleft condition of the palate (**150**).

2. Median Fissure of Upper Lip.

2. *Median Fissure of Upper Lip.*—In very rare instances the cleft or fissure may be exactly in the middle line of the upper lip. The lip only may be involved, but more commonly this condition is associated with a complete cleft of the palate and absence of the intermaxillary bones.

3. Fissure of Lower Lip.

3. *Congenital Fissure*, or *Clefts of the Lower Lip*, are of extremely rare occurrence.

4. Fissure of Lip and Cheek.

4. *Macrostoma*, or *Congenital Fissure of the Lip and*

*Cheek.**—In rare cases congenital fissures, involving the whole thickness of the cheek, are found extending from the angle of the mouth as far as the anterior border of the masseter muscle, or upwards towards the malar bone. At times this condition is found associated with the presence of supernumerary auricles (328).

95. *Ulceration of the Lip* may be due to various causes, *e.g.*: Ulceration of Lip.

1. *Simple*, in connection with herpes labialis (96); fissure, or cracked lip (97); irritable and dyspeptic ulceration of the tongue and mucous lining of the cheeks (135); stomatitis (127).

2. *Strumous.*—In strumous subjects, or in those suffering from a low state of health, superficial ulcerations and cracks or fissures, in many cases of a very intractable character, are often found affecting both the upper and lower lips.

3. *Syphilitic*, in the form of a chancre or primary sore (98), or accompanying the superficial form of syphilitic ulceration of the tongue and mucous lining of the cheeks (135).

4. *Cancerous*, in the form of epithelioma (99).

96. *Herpes labialis* is characterised by an eruption of small vesicles, which soon dry up and form a crust or scab, or bursting, leave a superficial ulceration. This condition is often found in connection with slight catarrh, or accompanying an attack of pneumonia. Herpes labialis.

97. *Fissure of the Lip*, or "*Cracked lip*," is often found as the result of exposure to cold. The crack is usually situated near the centre of the lower lip, involving only its mucous surface, being attended by much pain, and readily bleeding if its edges are accidentally separated from each other. Fissure of Lip—"Cracked Lip."

* Morgan, 'Lancet,' 1881, vol. ii, p. 289.

a. Hard or Infecting.

98. *a. Hard Chancres*, or primary syphilitic sores, are sometimes met with on the lips, usually the lower one, as the result of the direct inoculation of some accidental crack or fissure with the syphilitic virus.

In some cases, it shows itself as a fissure with indurated margins and base; in other cases, the whole thickness of the lip may be affected, being converted into a mass of indurated tissue with an ulcerated surface, which is usually somewhat smooth, and discharges a scanty secretion. In many cases, the lip is protruded and somewhat everted, so that the patient is unable to completely close the mouth.

The diagnosis of the affection, which is sometimes mistaken for epithelioma (99), can usually be made by attention to the following points:—In chancre, the affection is usually found at an earlier period of life, and most commonly in the female sex. The surface of the sore is generally flattened, and much less warty and irregular than is the case in epithelioma. The cutaneous border of the lip is oftener involved than the mucous surface, as in epithelioma. The induration at its base, if present, is not so marked and much more limited in extent. The submaxillary glands are usually affected at the time the case comes under observation, being involved at a much earlier stage of the disease (usually within three weeks) than is the case in epithelioma. If the case has been in progress for some weeks, secondary symptoms, *e. g.* rash and sore throat, will have usually made their appearance. Under specific treatment the sore will generally rapidly heal.

b. Soft or Non-infecting.

b. Much more rarely, as the result generally of auto-inoculation, from careless habits, want of cleanliness, &c., the lips are affected with the *soft* or *non-infecting chancre*. In this variety, the ulceration, which is of an

irregular and superficial nature, tends to spread along the mucous aspect of the lip, and there may be more than a single sore. At the same time, there is a more abundant purulent discharge from its surface and an absence of induration about its base, points which distinguish it from the hard chancre just described.

99. The lower lip is a favourite seat of *epithelioma*, the general characteristics of which are described in Table, p. 34. Epithelioma.

When the disease has existed some time, the submaxillary lymphatic glands will generally be found enlarged and indurated. This affection, which is often due to some local cause of irritation, *e.g.* a rough or carious tooth, smoking a clay pipe, &c., is much more common in males than females, and is rarely met with before middle life, usually after forty years of age.

100. *Mucous Cysts*, due to obstruction of the mucous glands, are sometimes found near the inner surface of the lower lip, appearing as small, rounded, painless tumours, often semi-translucent, and situated just beneath the mucous membrane. They are usually single, containing in their interior a viscid mucoid fluid. Mucous Cysts.

101. The lip is not uncommonly the seat of vascular tumours, either of an arterial, venous, or capillary variety (4). Nævi.

102. In strumous subjects, thickening or hypertrophy of the lips, more especially of the upper one, is often seen. In some cases this condition is produced as the result of chronic inflammatory changes in the parts, dependent upon the presence and constant irritation of fissures, cracks, or superficial ulcerations (95). Hypertrophy "Strumous Lip."

Eversion following Burns.

102 *a*. *Eversion* and dragging down of the lower lip is often seen when cicatrisation takes place in the case of burns affecting the neck and lower part of the face (**277** *a*).

CHAPTER VII

AFFECTIONS OF THE JAWS

103. *Tumours of the Upper Jaw* may be simple or malignant, cystic or solid, and they may spring from the surface of or from behind the superior maxilla, or from the interior of the antrum. *Tumours of Upper Jaw.*

Cystic Tumours may be either innocent or malignant, the simple tumours appearing in the form of dentigerous cysts and hydrops antri, the malignant in the form of cystic sarcoma and carcinoma, where cysts are developed in the substance of a tumour which is in itself of a malignant nature.

Solid Tumours may likewise be divided into innocent and malignant.

The innocent appearing as fibrous or fibroid, osseous, or cartilaginous growths.

The malignant appearing as sarcomata or carcinomata, both of these varieties often containing cysts in their interior.

The diagnostic signs of a tumour connected with the superior maxilla are as follows: Diagnosis.

When springing from the interior of the Antrum the orbital, nasal, palatal, or buccal walls of this cavity will be expanded according as the tumour grows upwards into the orbit, inwards into the nostrils, downwards into the mouth, or forwards upon the cheek, causing a prominence of one side of the face. In many instances a a. Origin.

tumour of the antrum grows simultaneously in all these directions, producing exophthalmos, obstruction of nostril, prominence of the cheek, and bulging of the roof of the mouth.

When springing from the anterior surface of the Superior Maxilla, it causes a projection of the cheek, dipping down between the gums and the soft structures of the face. As the tumour increases in size it may grow backwards into the interior of the antrum, and thus secondarily implicate that cavity.

When springing from behind the Superior Maxilla, the upper jaw will at first be pushed bodily forwards, but as the antrum becomes secondarily involved any of the walls of this cavity may subsequently become expanded and rendered prominent.

β. Simple or Malignant.

A *Simple Tumour* is characterised by its slower growth, its firmer consistence (except when cystic), its more regular and rounded outline, and by the non-implication of the neighbouring lymphatic glands and the skin covering it.

A *Malignant Tumour* is characterised by its more rapid growth, its softer and more elastic consistence, its ill-defined outline, its tendency to infiltrate the skin and project as a fungating mass, and, in the case of carcinoma, its implication of the lymphatic glands in the neighbourhood of the jaw.

γ. Cystic or Solid.

Cystic are distinguished from *solid* tumours by the semi-elastic and even fluctuating character of the swelling, and by the presence in some cases of a distinct egg-shell or parchment-like crackling on palpation, due to extreme thinning by absorption of the bone covering them.

1. Simple.

104. *Hydrops Antri* or *Dropsy of the Antrum.*—A slowly forming, painless dilatation of the cavity of

the antrum, characterised by expansion of its walls, so that the cheek is rendered round and prominent, and the floor of the orbit, roof of the mouth, and nasal cavity are all more or less encroached upon, semi-elastic to the touch, and when the expansion is extreme, giving rise to the sensation of egg-shell crackling upon pressure, is hydrops antri or dropsy of the antrum, a condition which was formerly looked upon as due to obstruction of the aperture leading from the antrum to the nostril and consequent retention of secretion, but which is now known to be dependent upon a cystic degeneration of the glandular follicles of the mucous lining of the antrum, the contents of the cysts consisting, not of true mucus, but of a glairy mucoid or a thin brownish serous fluid.

a. Cystic. Hydrops Antri or Dropsy of Antrum.

105. *Dentigerous Cyst.*—A cystic tumour with smooth outline, painless, and of slow growth, occasionally reaching a considerable size, and then characterised by egg-shell crackling on pressure, is a dentigerous cyst, due to the irritation of some tooth, usually a permanent one, which has been misplaced or ill-developed. An important symptom in the diagnosis of this affection is the absence from the mouth of some tooth or teeth, which have not appeared or which have never been extracted.

Dentigerous Cysts.

106. *Fibrous Tumours* not uncommonly spring from the antrum or body of the jaw, independent of any connections with the gums (cf. Epulis, **162**), and are characterised by their slow growth, regular outline, and uniform firm consistence. Small polypoid growths, not unlike those found in the nasal fossa (**84**), occasionally spring from the mucous lining of the antrum; in some cases the only symptom marking their presence is the discharge of a clear fluid from the nostril (**88**).

β. Solid. Fibroma.

Enchondroma.

107. *Enchondromata*, or tumours, consisting of a mixture of fibrous tissue and cartilage, are sometimes met with, and may attain a large size; their rate of growth is very variable, in some cases rapid, in others very slow. When running a rapid course, reaching a large size, these tumours are essentially of a malignant nature.

Osteoma.

108. *Exostoses* are also met with, usually of the ivory variety; they are sometimes found lying loose in the cavity of the antrum, owing to their having undergone fracture or spontaneous separation at their base of attachment.

In rare instances the upper jaw becomes the seat of the *diffused osteoma*, a large, irregular, lobulated mass of osseous tissue, springing from the superior maxilla, and often involving the neighbouring cavities and other bones of the face; great deformity is produced by this condition, which in some cases appears to be a general hypertrophy of the bones of the face, those of the cranium being at times also similarly affected (cf. Leontiasis, 33 *c*).

2. Malignant. Sarcoma. Carcinoma.

109. The malignant forms of tumour met with in the upper jaw are usually either sarcomata or carcinomata, the former being most common, and often containing cysts in their interior.

Carcinomatous tumours are usually of the encephaloid variety, and though generally described as "cancer of the upper jaw," the bone itself is only secondarily involved, the original seat of the disease being, as a rule, the mucous membrane lining the nasal fossa or antrum, whence it extends, usually expanding the antrum and manifesting itself as an enlargement of the superior maxilla.

The "diffused osteoma" above described is essen-

tially of a malignant nature, as in many cases life is eventually destroyed from mechanical interference with deglutition, pressure upon the brain, or some other complication.

Abscess of Antrum.

110. Suppuration may occur in the interior of the antrum as the result of some local injury, or in consequence of irritation set up by the fang of a carious tooth (bicuspid or molar); in other cases it may be associated with necrosis of its walls, or be due to the irritation caused by retained secretion. The symptoms are very similar to those of dropsy of the antrum (**104**), but are distinguished from that affection by being accompanied by evident signs of inflammatory action, viz. local heat and tenderness with throbbing pain. Any of the walls of the cavity may be expanded, and when the distension is extreme, egg-shell crackling on pressure is often present; or the pus, as it forms, may drain away through the socket of a tooth into the mouth, or discharge into the nose through the communication with the middle fossa. In other cases, perforating the anterior wall of the antrum, it may burst externally through the cheek, or, opening beneath the cheek, may discharge between it and the gum into the mouth.

Alveolar Abscess or Gum-boil.

111. *Abscess* about the gums is very common as the result of irritation set up by carious teeth; as suppuration takes place around the fang of the tooth, the bony walls of the alveolus become gradually expanded and absorbed, and the pus, as soon as it has formed, tends to make its way externally, either discharging at the free margin of the gum round the neck of the tooth, or perforating the gum at a point corresponding to the fang of the tooth involved. In other cases, the pus burrowing for some distance between the bone and

periosteum, or in the soft tissues after it has made its way through the periosteum, may find an exit on the surface of the cheek, and a fistulous opening may result, very similar to that which is often found in connection with necrosis of the jaw, the diseased tooth acting like a sequestrum, and preventing the sinus (at the bottom of which it can often be felt with a probe) from closing. The formation of an alveolar abscess is usually attended by considerable pain and tenderness on pressure, and the swelling which results is of an elastic and fluctuating character, in some cases localised and confined to the alveolar margin of the jaw, in others widely spread and accompanied by considerable fulness of the cheek.

Necrosis

112. *Necrosis* of the jaw is a common result of periostitis (**118**) from any cause; it may occur as a result of injury, *e. g.* fracture; it may follow one of the eruptive fevers, or be caused by the exposure to the fumes of phosphorus in persons engaged in lucifer match factories; in other cases it may be due to scrofula, syphilis, or salivation by mercury, and it may also occur in apparently healthy subjects without any assignable cause. The necrosis, which may attack either the body or alveolar margin of the jaw, is generally preceded by more or less pain and swelling in the affected part, and sinuses are usually present leading down to bare bone, and opening either externally upon the cheek, chin, or beneath the margin of the jaw, or internally into the mouth, and discharging a fetid pus which poisons the breath.

In phosphorus necrosis, which more commonly attacks the lower jaw, and is caused by the acid fumes gaining access to the bone through the sockets of carious teeth, the sequestrum, which is always slow in separat-

ing, is generally surrounded by a large mass of spongy bone poured out by the neighbouring periosteum.

The necrosis which follows the eruptive fevers (scarlet fever, measles, &c.) is probably due to a similar cause, viz. the access of a specific poison to the bone through the sockets of the teeth; it is generally limited to the alveolar margin, the body of the jaw as a rule escaping.

Fracture of Upper Jaw.

113. Fracture of the upper jaw may involve either the body or alveolar margin and hard palate; the injury is often complicated with laceration of the face, and when the alveolus is involved, there will be loosening and more or less displacement of the teeth. When the anterior wall of the antrum is driven in, considerable deformity may remain, owing to the difficulty of replacing the depressed fragments, and emphysema (**68**) is often present.

Enlargement or Expansion of the Lower Jaw.

114. *Enlargement* or *Expansion of the Lower Jaw* may be due to—

1. *New growths, e. g.* different forms of tumours (**115**).

2. *Simple Inflammatory Affections, e.g.:*

α. Acute periostitis (**118**).

β. Chronic periostitis (**118**).

γ. Necrosis of the body of the jaw, where the sequestrum or dead portion of bone is surrounded by a greatly thickened case of new bone (**112**).

δ. Alveolar abscess, in connection with carious teeth, when the pus, not finding an outlet, burrows between the bone and periosteum, or forms a diffused swelling beneath the tissues of the gum (**111**).

ε. Excessive formation of callus after fracture, in cases where the fragments have not been kept at rest (**120**).

115. The tumours met with in connection with the lower jaw are very similar to those occurring in the superior maxilla (103).

Sarcomata springing from the periosteum, or having their origin in the interior of the bone, are not uncommon, and are in many cases of an especially malignant nature. They are more or less elastic in their consistence, often containing cysts in their interior, and may rapidly attain a large size, involving the skin, bulging forwards the chin, pushing up the tongue, or growing downwards beneath the floor of the mouth.

The various forms of *epulis* (162), *dentigerous cysts* (105), *fibrous* and *fibro-cystic* tumours, and more rarely *osseous* and *enchondromatous* growths, are also met with, all of which present characteristics very similar to those which are found in the case of similar growths affecting the upper jaw (106—108).

Fibro-cystic Tumours.—The lower jaw is a favourite seat of the so-called "fibro-cystic tumour," which may attain an immense size. It is, in some cases, the result of irritation set up by imperfectly-developed and misplaced teeth, and consists of a number of cysts, whose walls are usually formed partly of bone and partly of fibrous tissue, and which contain a clearish fluid in their interior.

The nature of the growth, which, unless it contains sarcomatous elements mingled with the fibrous tissue, is essentially of a simple character, is rendered evident on exploratory puncture, and in many cases a feeling of crackling, due to extreme thinning of the bone by absorption, can be obtained on pressure over the most prominent portion of the swelling.

Closure of the Jaw.

116. *Closure of the Jaw*, or inability to open the mouth, may be due to—

1. *Anchylosis of the Temporo-maxillary Joint*, the result of chronic rheumatic arthritis, or other disease affecting the articulation (**117**).

2. *Cicatricial Contraction of the Soft Structures* either within or without the mouth, following extensive injuries, burns, cancrum oris, lupoid, or other forms of ulceration.

3. *Spasmodic Contraction of the Muscles of the Jaw*, due to reflex irritation, as in the case of carious or imperfectly-developed teeth; under this head may be included trismus or lock-jaw, one of the earliest symptoms of tetanus.

4. *Inflammatory Affections in the neighbourhood of the Jaw, e. g.* mumps (**64**), parotid abscess (**65**), alveolar abscess (**111**), &c.

Diseases of Temporo-maxillary Joint.

1. Chronic Rheumatic Arthritis.

117. *Chronic Rheumatic Arthritis* is usually met with in persons somewhat advanced in life, and is characterised by enlargement of the condyle of the jaw, with crepitation on movement, and stiffness and inability to completely open the mouth. The pain, which is usually present, is of a dull, aching kind, worse at night, and influenced by the state of the weather. If absorption of the articular eminence takes place, considerable deformity may be produced, owing to displacement of the jaw by muscular action.

2. Rheumatic Anchylosis.

In other cases, without any affection of the articular surfaces, complete closure of the jaw may be produced as the result of fibrous anchylosis from thickening and contraction of the ligamentous structures about the joint.

This affection, which is sometimes met with in young people who have suffered from acute or subacute rheumatism, develops itself much more rapidly than the preceding condition.

Diseases of Temporo-maxillary Joint.

3. Suppurative Arthritis.

As the result of disease commencing in the synovial membrane, condyloid process, or glenoid cavity, erosion of the cartilages, with destruction of the interarticular fibro-cartilage, and absorption of the articular surfaces entering into the formation of the joint, may be produced.

If suppuration occurs, more or less disorganisation of the articulation will ensue, and sinuses will be often found in the neighbourhood of the joint discharging pus, and leading down to dead and exposed bone.

This condition is sometimes met with in children as the sequel of one of the exanthemata, or it may show itself in the course of a case of pyæmia.

When occurring in young children, a movable jaw by the formation of a new joint sometimes results, but in the majority of cases anchylosis more or less complete will be produced.

Periostitis of Lower Jaw.

118. As the result of external injury, neglected fracture, or other causes, acute periostitis may be produced.

Acute.

This will manifest itself as a hot and painful swelling, deeply situated, and connected with the body of the jaw, and accompanied by more or less redness and œdema of the soft structures covering it. If suppuration (periosteal abscess) occurs between the periosteum and the bone, fluctuation will be detected, and after evacuating the pus a probe will probably come into contact with bare bone, and necrosis of its superficial portion may result in consequence of its being denuded of its periosteal covering.

Chronic.

In the chronic form the symptoms are much less evident and severe: there is more or less enlargement of the body of the jaw, not distinctly circumscribed, and attended by pain of a dull aching character, aggravated at intervals, and especially worse at night.

Dislocation of Lower Jaw.

119. *Dislocation* may involve only one or both of the condyles, *i.e.* it may be unilateral or bilateral.

a. Bilateral.

If *bilateral* the mouth is widely open, and cannot be closed, the chin projects, there is a hollow in front of the ear on either side where the condyle should be, and an undue prominence above the zygoma in the temporal fossa, caused by the displaced coronoid process. Speech is impaired, deglutition is interfered with, and the saliva dribbles from the mouth.

b. Unilateral.

If *unilateral* there is a marked depression in front of the ear on the affected side, and the chin is displaced in the opposite direction. The other symptoms are present, though in a less degree.

Fractures of Lower Jaw.

120. *Fractures of the Lower Jaw* are generally compound, sometimes from external wound, but more frequently from laceration of the tissues of the gum by the broken fragments. Any part of the bone may be broken, *e.g.* the neck, angle, ramus, or coronoid process, but the most frequent situation is through the body, at that spot where it is specially weakened by the mental foramen and the deep socket for the canine tooth.

a. Body.

Fracture through the Body.—The symptoms of fracture are usually well marked, especially when, as is often the case, the fracture is double (*i. e.* on both sides of the symphysis), for the central portion is then drawn down by the muscles attached to the hyoid bone. There is considerable mobility of the fragments with crepitus, irregularity in the line of the teeth, dribbling of saliva from the mouth, impairment of speech, and if, as is often the case, the fracture is compound, laceration of the gums.

b. Angle or Lower part of Ramus.

Fracture through the Angle or Lower part of the Ramus.—In this case the displacement is not usually great, owing to the muscles on either side (masseter and

internal pterygoids) keeping the fragments in position.

c. Neck. *Fracture through the Neck.*—The condyle is displaced, being drawn inwards and forwards by the external pterygoid. Crepitus is produced and pain is experienced upon attempting to open the mouth.

d. Coronoid process. *Fracture through Coronoid Process.*—The fractured coronoid process is drawn upwards and backwards by the temporal muscle, forming an undue prominence in the temporal fossa.

Fracture through the Glenoid Cavity. **121.** *Fracture of the Glenoid Cavity* may be produced owing to the condyle of the lower jaw being forcibly driven into it, and in rare instances the condyle may be driven through the fossa, so as to project into the cavity of the cranium and press upon the base of the brain.

Alteration in Shape of Lower Jaw. **122.** *Alteration in Shape of the Lower Jaw* may be due to several causes:

1. Congenital. 1. *Congenital.*—Imperfect development, or absence more or less complete, of the lower jaw is sometimes seen. In many cases it is associated with some other congenital deformity, *e.g.* with the presence of branchial fistulæ (**276**), malformations of the ear, supernumerary auricular appendages (**328**), macrostoma (**94**), &c.

2. From Disease. 2. *From Disease.*—Tumours of the upper jaw, growths within the mouth, hypertrophy of the tongue, cicatricial contraction after extensive injuries or ulceration about the lower part of the face, &c., may all from simple mechanical causes (*e.g.* pressure, dragging, &c.) produce considerable alteration in the shape of the lower jaw.

3. In Rickets. 3. In *Rickets* the inferior maxilla and bones of the face generally are often retarded in their growth. At the same time, the shape of the lower jaw is often some-

Alteration in Shape of Lower Jaw.

what altered; it becomes polygonal instead of arched, and the direction of its alveolar process is changed becoming inclined inwards.

4. *In Old Age*, after the loss of the teeth, the alveolar process of the body of the jaw becomes absorbed, its basilar portion alone remaining. At the same time, the rami become oblique in direction, forming an obtuse, instead of a right angle with the body.

4. In Old Age.

CHAPTER VIII

AFFECTIONS OF THE TEETH

In Congenital Syphilis.

123. Children, or young adults, the subjects of *congenital syphilis*, often present a peculiar malformation of the permanent teeth, most marked in the incisors, especially the central ones of the upper jaw, the shape, size, and direction of which are in many cases considerably altered.

In typical cases, the central upper incisors present a vertical notch, usually of crescentic shape, on their cutting edge; their lateral borders are bounded by curved outlines, the convexities of which look outwards, and their cutting edge is narrower than their neck, just the reverse of what is found in the normal state.* At

* The characteristic notch present on the cutting edge of the central upper incisors in congenital syphilis must not be confounded with the notches or serrations often normally present in the teeth of young subjects, which vary in number and degree. Not uncommonly, the central upper incisors show three little projections or denticles, separated by two little notches (or there may be four projections and three notches).

The lateral incisors, on the other hand, often present "a single central notch, one which, if it occurred in the central incisors, might easily lead to the suspicion of syphilis."

"The malformation peculiar to syphilis is caused by the non-development of the central denticle in the three-toothed upper central incisor; this leaves a gap in the middle and allows the lateral denticles to fall together, thus producing the characteristic shape." (Hutchinson, 'Clinical Lectures,' plate 43.)

the same time they are usually somewhat dwarfed or diminished in size, and their direction is altered, so that they often converge towards or diverge from each other. The other incisors are usually similarly deformed, though to a much less extent, as also the canines, which are often somewhat peg-shaped, and may present a notch on their cutting border; in many cases they are separated from one another by wide gaps. At the same time, owing to deficiency of enamel, the teeth are soft and of a bad colour, readily wearing away; on this account the characteristic malformation disappears after many years of wear, being, as a rule, only to be recognised between the ages of eight and twenty-five or thirty years.

In some cases the cutting edge, which is usually much thinned, presents a number of small spines bounded above by a crescentic line ("serrated teeth"), or two notches with a central projection ("peg-top teeth"); these two conditions are usually an early stage in the formation of that above described, for, after a time, the little spines or projections will wear away or break off, leaving as the result a single crescentic notch on the cutting border of the tooth.

These malformations of the teeth (which it must be borne in mind are not necessarily present in the subjects of congenital syphilis) are the indirect result of stomatitis (127) during infancy, which, involving the periosteum of the gums and lining membrane of the dental follicles, interferes with the nutrition and development of the tooth just at the period when dentification is taking place.

Mercurial, Rocky, or Honeycombed Teeth.

124. As the result of the administration of mercury during infancy for convulsions, congenital syphilis, or other causes, or probably as the result in some cases of simple disturbance of health accompanied by stomatitis,

the permanent teeth often exhibit a defective development of enamel; as a result of this, erosion of the exposed dentine readily takes place, and the crown of the tooth presents in consequence an irregular, rugged, discoloured appearance, its surface being pitted and often marked with horizontal groovings; at the same time the cutting edge is often unusually sharp, owing to the thinness of its covering of enamel.

The incisors, canines, and first molars in particular, are usually affected in this manner, the biscuspids and second and third molars, which are developed at a later period (when the causes that arrest the enamel formation are not in action), as a rule altogether escaping.

This condition of the teeth must not be confounded with that present in congenital syphilis, consisting, as it does, not so much in alteration of the shape of the teeth as in defective development of enamel; the two conditions are not, however, uncommonly combined, that is to say, a typical syphilitic tooth may present a rocky or honeycombed condition of its crown as the result simply of imperfect development of its covering of enamel.

In Rickets. Struma.

125. In *Rickets, Struma,* or in any condition which is associated with defective or depressed nutrition during infancy, when dentition is taking place, the proper development of the teeth is interfered with; hence both temporary and permanent teeth are cut late, they are deficient in enamel, and often present a rocky or pitted appearance, or are marked with transverse lines.

The permanent incisors, which may be large, white, and well formed, are often thin and brittle, and their cutting edge is not unfrequently notched and serrated; the teeth generally soon become carious, readily crumbling and wearing away.

"Craggy Teeth."

126. In the so-called "*craggy teeth*" the enamel on the lower halves of the crowns of the upper incisors and canines, or the upper halves of the crowns of the lower incisors and canines, "is absent, and its deficiency is bounded by an abrupt transverse line which deeply grooves the tooth. The denuded part of the tooth shows strong ridges, and is by no means in the soft, pitted, and crumbling condition often seen in the teeth of stomatitis."

"I believe that a tendency to the 'craggy teeth' is sometimes a matter of family inheritance, and they may sometimes probably be produced by mercury. They are to be carefully distinguished from those of syphilis." *

* Hutchinson, 'Clinical Lectures,' plate 43.

CHAPTER IX

AFFECTIONS OF THE MOUTH

Stomatitis.

127. *Stomatitis,* or inflammation of the mucous membrane of the interior of the mouth and gums, is not at all uncommon, especially in young children, and may appear under various forms.

1. Simple.

In the *simple* form, small, bright, red patches appear on the inside of the cheeks, on the gums, or at the angles of the lips, which, increasing in size and coalescing with one another, may gradually involve the whole of the interior of the mouth. There is more or less swelling of the affected part, with increased secretion of mucus, and superficial erosions or distinct ulcerations are often produced, giving rise to the *ulcerative* form of stomatitis.

There is generally some derangement of the digestive organs, viz. furred tongue, foul breath, loss of appetite, and a disturbed condition of the bowels, this condition being in the majority of cases the result of improper diet.

2. Aphthous.

In the *aphthous* or *croupous* form, small whitish spots, surrounded by more or less redness, appear in different parts, often in considerable numbers, and these eventually becoming confluent may become the seat of superficial ulceration.

3. Thrush.

In the *parasitic* variety, or "*thrush*," which is due to the presence of a parasitic fungus—*Oidium albicans*,

Stomatitis.

whitish spots, consisting of epithelial cells mingled with the sporules and filaments of the fungus, appear on reddened patches, presenting an appearance not unlike that of curdled milk.

4. Syphilitic.

In children, the subjects of congenital *syphilis*, the mucous membrane of the mouth is very subject to attacks of inflammation, coming on shortly after birth, following closely or accompanying the inflammation of the interior of the nose, which gives rise to the characteristic "snuffles" (**77**).

5. Gangrenous.

The *gangrenous* form of stomatitis or "cancrum oris" is described (**53**).

6. Mercurial.

The *mercurial* form of stomatitis is described (**164**).

Affections of Mucous Lining of Cheeks.

128. The mucous membrane of the cheeks may be the seat of *psoriasis* (**133**); *ichthyosis* (**134**); *mucous tubercles* (**139**); *syphilitic ulceration*, superficial or deep (**135**), or *epithelioma* (**135**); and in each instance the appearance will closely resemble that which is found when the tongue is similarly affected with the same disease.

1. Psoriasis.
2. Ichthyosis.
3. Mucous Tubercle.
4. Syphilitic Ulceration.
5. Epithelioma.

6. Simple Ulceration.

Simple ulceration, affecting the mucous lining of the cheeks and angles of the mouth, usually of a superficial nature, is often found in association with the irritable (**135**), or dyspeptic (**135**) ulceration of the tongue, or in consequence of salivation by mercury (**164**); in young children it is often produced as the result of the different forms of stomatitis (**127**).

Ranula.

129. A *Ranula*, or *Sublingual Cyst*, is a cystic tumour found on the floor of the mouth beneath the tongue, the result generally of dilatation of one of the sublingual ducts or mucous follicles present in this situation. It usually appears as a semi-transparent, fluctuating, globular swelling, the size of a walnut or small egg, often considerably displacing the tongue, and containing

in its interior a thin glairy fluid, but not true saliva; in many instances Wharton's duct may be traced running along its external surface, showing that the tumour is not connected with or due to obstruction of the duct of the submaxillary gland (in exceptional cases, however, as the result of obstruction from some cause, *e. g.* a calculous concretion (131), dilatation of the duct may be produced, and under these circumstances the contents of the cyst would consist of saliva). When of large size the swelling may be perceptible externally beneath the jaw, and fluctuation may then be obtained between the neck and the interior of the mouth.

Sublingual Sebaceous Cyst.

130. *Encysted Tumours*, often congenital and of the nature of sebaceous cysts, are sometimes met with, lying upon the mylo-myoid muscle and situated more deeply in the floor of the mouth than the ranula or simple sublingual cyst (129). They project at the upper part of the neck beneath the jaw rather than on the floor of the mouth, often forming prominent tumours the size of an orange, and containing in their interior, not a thin glairy fluid, but cheesy sebaceous matter.

Salivary Calculi.

131. *Salivary Calculi* not uncommonly form in the ducts of the sublingual or submaxillary glands, giving rise to the presence of a hard swelling on the floor of the mouth, usually in the neighbourhood of the frænum linguæ. If the obstruction is complete, causing retention of the salivary secretion, the corresponding gland will be more or less swollen and painful, and in exceptional cases it may become the seat of suppuration and abscess.

CHAPTER X

AFFECTIONS OF THE TONGUE

Chronic Superficial Glossitis. "Smooth Tongue."

132. As the result of chronic inflammatory changes affecting the superficial structure of the tongue, obliteration of the papillæ and extreme thinning of their epithelial covering is produced, and in consequence of this its surface presents in places a smooth and glossy appearance. The patches are generally of an oblong or oval shape, and of a raw-looking or deep-red colour. The tongue itself is often somewhat enlarged and swollen, and at the same time not uncommonly affected with superficial ulceration. In many cases this condition is associated with constitutional syphilis, and, like ichthyosis (**134**), it is not unfrequently found to precede or accompany epithelioma.

Psoriasis linguæ.

133. Circumscribed patches of a white, opaque appearance, due to accumulation and matting together of the epithelium, which is from time to time detached and shed, leaving the exposed surface raw and of a deep-red colour, are present in *Psoriasis linguæ*, a condition often associated with constitutional syphilis, but not uncommonly occurring in connection with dyspepsia, or some cause of local irritation.

Ichthyosis linguæ.

134. In this affection the epithelial and papillary elements of the tongue are much hypertrophied and thickened, as a result of which its surface is covered with white patches, varying in extent, thickness, and

Ichthyosis linguæ.

consistence. The papillæ, immensely hypertrophied and overloaded with epithelium, may retain their separate form, or they may be welded together and covered over with a layer of thickened epithelium, which completely conceals them from view, the patches, which are often almost of cartilaginous consistence, then assuming a somewhat smooth appearance.

Ichthyosis linguæ may present itself under three different forms, viz.:

1. Whitish patches, varying in extent, presenting a smooth surface of cartilaginous or almost horny consistence. In some cases the patches are broken up into quadrilateral spaces by slight fissures, which intercross each other.

2. Diffused patches, consisting of filiform papillæ, immensely hypertrophied (in some cases a quarter of an inch or more in length), but still retaining their separate form.

3. In cases where the ichthyotic patches are single, circumscribed, and limited in extent, approaching more in character the warty growths so often seen on the skin, they are often described as "papillomata of the tongue," and, in fact, the ordinary form of the disease itself might be well described as a diffused papillomatous condition of the surface of the tongue.

This affection is in rare cases congenital. More commonly it is found associated with syphilis, or some cause of local irritation, *e.g.* smoking, rough or carious teeth, &c.

The ichthyotic patches may remain in a stationary condition for many years, or they may slowly extend, causing very little pain or inconvenience. In other instances they may ulcerate, and not at all uncommonly they eventually develop into epithelioma, so that we

sometimes find the same tongue presenting distinct evidences of both ichthyosis and epitheliomatous ulceration.

In some cases the surface of the gums or the mucous lining of the cheeks are similarly affected at the same time, and this condition may appear independently in either of these situations.

135. *Ulceration of the Tongue* may be due to some cause of local irritation, or it may be associated with chronic dyspepsia, or be of a syphilitic or a cancerous (epitheliomatous) nature. *Ulceration.*

Irritable Ulcers are generally caused by the irritation of rough or carious teeth, and in many cases the lips (**95**) and interior of the cheeks (**128**) are similarly affected at the same time. The ulcers, which are often multiple, are found chiefly on the margin and tip of the tongue or on the folds of the frænum, and they are generally very painful, interfering with speech and mastication. They are distinguished from epithelioma by their superficial nature, by the fact that they are generally multiple, and by the absence of much or any induration about their base. 1. Irritable Ulcer.

Dyspeptic Ulcers are usually situated on the dorsum in the middle line, and often originate in psoriasis (**133**), so that evidence of that affection is often present along with them. They generally arise without any cause of local irritation, and the patient has usually suffered for some time from dyspepsia. 2. Dyspeptic Ulcer.

This condition is diagnosed from epithelioma, which affection it resembles more closely than the preceding, by the fact that the ulcers, which are not unfrequently multiple, are usually situated at the middle of the tongue (an unusual situation for epithelioma), and not at its margins, by the absence of much induration of

their base, edges, and surrounding tissues, by the condition of the tongue, which is often affected with psoriasis, and presents symptoms of derangement of the digestive organs, and by a history of chronic dyspepsia.

3. Syphilitic. *Syphilitic Ulceration* may occur in either the early or late stages of the constitutional affection, assuming either a superficial or a deep form.

Secondary or *Superficial Ulceration* usually appears in the form of fissures or cracks, though in some cases superficial ulcers of round, oval, or irregular shape are also found. These are generally multiple, occurring at the anterior part of the tongue, especially on the tip, sides, and under surface, and they are often accompanied by similar ulcerations upon the insides of the cheeks and at the angles of the mouth.

The ulcers are generally of a painful nature, and after they have healed leave behind them smooth, shining cicatrices and milk-white scars. The tongue is at the same time often affected in other places with patches of psoriasis (**133**), or chronic superficial glossitis (**132**).

Tertiary or *Deep Ulceration* is generally the result of the softening and breaking down of a gumma (**141**) which has formed in the substance or on the surface of the tongue. It is generally situated in the median line in the neighbourhood of the fibrous raphe, and usually on the middle or posterior surface of the dorsum. For the diagnosis from epithelioma (cf. **136**).

4. Cancerous. *Cancerous Ulceration.—Epithelioma* is the only variety of carcinoma that attacks the tongue. It in most cases first appears as a small nodule or in the form of a fissure or small ulcer, which in the early stage may closely simulate the simple ulcers just described. Like

the same affection attacking the lip, it is much more common in males than females. Any part of the tongue may be attacked, but its margins, towards the middle or posterior part, suffer much more frequently than the dorsum or anterior portion.

In the following table the main points of distinction between this affection and the deep syphilitic ulcer, with which it is very liable to be confounded, are laid down.

136. *Differential Diagnosis of Epithelioma and Deep Syphilitic Ulcer.*

Diagnosis of Epithelioma and deep Syphilitic Ulcer.

	Epithelioma.	Syphilitic Ulcer.
Cause	Often due to some local irritation, *e.g.* rough or carious teeth; smoking a clay pipe	Due to breaking down of a gummatous deposit, not to any local irritation.
Age	Generally over 40 years	Generally under 40 yrs.
Situation	Most commonly at one side, towards middle or posterior third	Often in median line, towards middle or posterior surface of dorsum.
Shape	Irregular	Oval or round.
Base	Foul and sloughy; rough and irregular, with well-marked and widespread induration	Deeply excavated; much less induration; often covered with a "wash-leather" slough.
Edges	Raised, everted, thickened, and indurated	Ragged and irregular; often sharply cut.
Course	Ulceration primary, the induration about base being secondary to the ulceration	Ulceration secondary, *i.e.* the induration (viz. the gumma) breaks down and ulcerates.
Floor of mouth	Becomes involved, so that tongue after a time is tied down, fixed, immovable, and incapable of being protruded from the mouth	Not involved, so that tongue is freely movable and capable of being protruded from the mouth.

	Epithelioma.	Syphilitic Ulcer.
Speech	Soon interfered with, owing to the fixation of tongue	Not much affected, as tongue remains free.
Pain	Usually acute; often a prominent symptom	Generally slight.
Glands	Those beneath jaw (submaxillary) soon affected with secondary deposits	As a part of a general glandular implication, those in the neck (especially posterior cervical and occipital) may be slightly enlarged and indurated; at the same time, the submaxillary may be affected, as the result of simple irritation propagated from the ulcer.
Number	Generally single	May be multiple, though usually single.
Progress	Generally rapid; floor of mouth, and in many cases the pillars of fauces becoming involved.	Slow and stationary.
Result of treatment	No effect	The ulcer heals, often leaving a deep fissured cicatrix (143). At same time, the glandular enlargement, if due to simple irritation, also subsides.
Concomitant symptoms	After a time, evidences of the cancerous cachexia	A history or other evidences of syphilis.

Syphilitic Affections.

137. Syphilis may attack the tongue in any of the following manners, viz.:

1. "Desquamative Syphilis of Tongue."

Small white patches appearing at the tip or margin of the tongue, and spreading with crescentic outline towards its base or centre, due to thickening of the epithelium, which is from time to time shed, leaving the exposed surface smooth and of a vivid red colour, are

Syphilitic Affections.

due to "*desquamative syphilis of the tongue*," a condition recently described as occurring in young children the subjects of congenital syphilis.*

2. Chancre.

138. Primary sores, the result of direct inoculation with the syphilitic virus, are occasionally, though very rarely, seen attacking the tongue. The sore presents the characteristic appearance of the Hunterian chancre, though somewhat modified by its unusual situation, and is soon followed by enlargement and induration of the glands beneath the jaw.

3. Mucous Tubercles.

139. Mucous tubercles are generally an early secondary symptom, occurring at the same time as the papular eruption on the skin. They show themselves as broad, flattened, slightly-raised patches, of a pale-white colour, situated on the margins or surface of the tongue, and resembling in their general appearance the mucous tubercles so often seen on other parts.

In many cases ulceration or erosion of their surfaces occurs, giving rise to the "superficial syphilitic ulcer" (135, 3).

4. Chronic Superficial Glossitis.
5. Psoriasis.
6. Ichthyosis linguæ.

140. The appearances presented by these affections, which are often found in patients suffering from constitutional syphilis, have been already described. Cf. Chronic Superficial Glossitis (**132**), Psoriasis (**133**), Ichthyosis linguæ (**134**).

7. Gummata.

141. Gummatous deposits may form in the substance of the tongue, in some cases near or upon the margins, but more commonly on the dorsum, in the neighbourhood of the fibrous septum, and towards its middle or posterior part. They usually appear as small, nodular, painless tumours, single or multiple, varying in size from a pea to a filbert (though in some cases they may attain larger dimensions), projecting on the surface and

* Parrot, 'Med. Times and Gaz.,' 1881, vol. i, p. 461.

pushing forwards the mucous membrane, or situated more deeply in the substance of the tongue.

They may remain stationary in this condition for a considerable length of time, giving rise to slight inconvenience, and may subsequently become absorbed and disappear under treatment, producing a fissured condition of the tongue (**143**), or they may soften and break down, giving rise to the formation of the deep tertiary ulcer (**135**).

8. Ulceration.

142. In constitutional syphilis the tongue may become the seat of ulceration, either of a superficial or a deep character (**135, 3**).

9. Fissured Tongue.

143. As the result of absorption of gummatous deposits, or after healing has taken place in the case of deep tertiary ulcers, fissures are left extending into the substance of the tongue, and at the same time, in consequence of cicatricial contraction of the adjacent tissues, considerable distortion is often produced, the tongue being twisted on itself or drawn over to either side. These fissures cannot be effaced by stretching out the tongue with the fingers, thus differing from the rugæ or simple folds in the mucous membrane, which are often present on the dorsum of the tongue of those who are the subjects of chronic dyspepsia.

Acute Glossitis.

144. Acute inflammation of the substance of the tongue is sometimes seen as the result of injury, salivation by mercury, iodism, or in some cases occurring idiopathically without any apparent cause.

The tongue rapidly swells so as to fill the mouth, and in consequence, speech, deglutition, and respiration are considerably interfered with; the glands beneath the jaw are enlarged and painful, and there is excessive discharge of saliva from the mouth. The inflammation

may subside or terminate in the formation of an abscess, or diffuse suppuration.

145. *Abscess* usually appears as a circumscribed swelling, more or less superficial, or deeply seated in the substance of the tongue, fluctuating, or of an elastic consistence; on inquiry it will generally be found to have been preceded by symptoms of inflammation. It may also occur in connection with syphilis, as the result of the softening and breaking down of a gummatous deposit (**141**). Abscess.

146. *Macroglossia* or *Hypertrophy of the Tongue* is usually a congenital affection; the enlargement, which may be symmetrical or may affect one side more than the other, is often so great that the organ projects from the mouth, *Prolapsus linguæ*. This condition has been referred to hypertrophy of the muscular elements, or of the fibrous tissue of the tongue, but in many cases it appears to be the result of lymphatic obstruction and consequent dilatation of the lymph-spaces which normally exist in its substance, and should therefore be regarded as an example of diffused lymphangioma or lymph-tumour affecting the tongue; in some cases it is associated with the presence of a hygroma (**252**), or cystic tumour, at one side of the neck, which is then probably due to the same cause, viz. lymphatic obstruction.* Macroglossia.

In those instances where the affection is not congenital, it usually comes on during the first two or three years after birth.

147. Owing to congenital shortening of the frænum linguæ, the anterior portion of the tongue may be fixed and bound down to the floor of the mouth, so that it is incapable of being protruded beyond the teeth; Tongue-tie.

* Maguire, 'Journal of Anatomy and Physiology,' vol. xiv, p. 416.

as a result of this deformity, suckling is interfered with, and when the child grows older, articulation is more or less imperfect.

Nævi. **148.** Nævi are sometimes met with on the tongue, usually at birth, of small size or involving the greater part or even the whole of the organ.

CHAPTER XI

AFFECTIONS OF THE PALATE

150. Congenital fissure of the palate may appear in various degrees of severity, viz. Cleft-palate.

1. *Simple fissure of the soft palate*—when the cleft is confined to the soft palate, involving only the uvula, or, in addition, a portion or the whole of the velum palati.

2. *Fissure of the soft and a part of the hard palate*—when the cleft involves the whole of the soft and a portion of the hard palate.

3. *Complete fissure*—when the cleft involves the soft and the whole of the hard palate. In this form the alveolar margin of the jaw may be perfect, or it may present a single cleft corresponding with the line of junction of the intermaxillary and superior maxillary bones; or there may be a double cleft of the alveolar ridge corresponding with the lines of junction of the intermaxillary and superior maxillary bones, continuous posteriorly with a median fissure of the hard and soft palates. When the alveolar ridge of the jaw is thus involved, harelip (**94**) is usually associated with the cleft palate; when the cleft in the alveolus is double, double harelip is generally present; when single, the lip is usually similarly affected, the cleft in the lip corresponding with that in the alveolar margin.

151. Extreme arching or a dome-shaped condition of Arched Palate.

the hard palate is not unfrequently present in children the subjects of congenital syphilis.

Elongation of Uvula.

152. The uvula is at times much thickened and increased in length, and under these circumstances is liable to give rise to somewhat unpleasant symptoms, *e. g.* constant cough, and other symptoms of laryngeal irritation, tickling sensation in throat, feeling of nausea, &c.

Ulceration of Palate.

153. *Ulceration of the Palate*, hard or soft, is very common as one of the symptoms of constitutional

1. Syphilitic.

syphilis; it may be either of a superficial nature, or may extend deeply, causing perforation of the hard or considerable destruction of the soft. When the disease is arrested the ulcers heal, and adhesions often form between the velum and the back of the pharynx, causing more or less stenosis of the pharynx (**180**), and consequently interfering with deglutition and often producing a nasal intonation of voice.

2. Epitheliomatous.

In other cases it is due to epithelioma, commencing in the velum palati or pillars of the fauces, or spreading from the tonsil (**172**) or tongue (**135**), and involving the palate secondarily from simple extension.

Perforation of Hard Palate.

154. *Perforation of the Hard Palate* is generally the result of syphilitic ulceration of its mucous covering, which, extending deeply and involving the bone, has been followed by caries or necrosis of the bony palate; the presence of this condition is usually indicated by a nasal intonation of voice.

Swelling or Prominence on Roof of Mouth.

155. A *Swelling* or *undue Prominence on the Roof of the Mouth* may be due to various conditions, viz.

1. Inflammatory.

1. *Simple inflammatory affections, e. g.* a simple abscess forming in the soft tissue covering the hard palate, as, for example, alveolar abscess, forming in connection with the upper teeth and burrowing backwards beneath

Swelling or Prominence on Roof of Mouth.

the bone and periosteum, or in the soft tissues forming the roof of the mouth. This condition may be distinguished from a periosteal sarcoma springing from the hard palate, which in some cases it closely resembles, by a history of pain with symptoms of inflammation attending its formation, by the presence in many cases of a carious tooth, by the more rapid formation of the swelling, by its more elastic nature, and by the presence of fluctuation; in many cases, when of a chronic nature and unattended by symptoms of inflammation, recourse to exploratory puncture may be necessary before a diagnosis can be made.

2. *Gummy tumours* (157). 2. Gummy Tumours.

3. *Tumours* or *new growths*, *e. g.* a tumour originating in or involving the antrum, growing downwards and pushing before it the hard palate (103). 3. New Growths.

An epulis springing from the alveolus, growing backwards and involving the roof of the mouth (162).

Epithelioma springing from the mucous membrane of the mouth or alveolus (163).

Sarcomata springing from the periosteum of the hard palate, appearing as a soft, semi-elastic, more or less rapidly growing tumour affecting the roof of the mouth (for diagnosis from alveolar abscess, cf. 155).

156. An undue prominence, displacement, or pushing forwards of the soft palate may be due to various causes, *e. g.*: Displacements forwards of Soft Palate.

Naso-pharyngeal polypus (84).

Retro-pharyngeal abscess (182).

Pharyngeal tumours (184).

Abscess of soft palate (159).

Gummy tumours of soft palate (157).

Very rarely, meningoceles of the base of the skull (2),

or spina bifida, presenting itself on the anterior aspect of the vertebral column (**311**).

Gummy Tumours of Palate.

157. In acquired syphilis a deposit of gummatous material often occurs in the soft tissues of the hard palate, in many cases involving also the periosteum covering the bone. This usually shows itself as a soft, elastic swelling upon the roof of the mouth, often in the median line, varying in size from a pea to a walnut, or even larger; if not absorbed under treatment, it will probably soften and break down, giving rise to superficial ulceration, or if extending deeply, it will probably expose a necrosed condition of the palatal process of the superior maxilla, and in many cases an opening will result (**154**), forming a communication between the buccal and nasal cavities.

In children, the subjects of congenital syphilis, well-defined tumours of a similar nature are sometimes seen; they are most common between the ages of six and twelve, and may attain the size of a walnut, or even larger.

A similar deposit of gummy material may occur in the substance of the soft palate, giving rise to the presence of a small tumour, varying in size from a pea to a bean; as the result of softening and breaking down of this deposit, ulceration, perforation, and destruction, more or less extensive, of the soft palate is very liable to ensue (**153**).

Necrosis of Hard Palate.

158. *Necrosis* of the hard palate is generally the result of the softening and breaking down of a deposit of gummy material in the soft tissues or periosteum covering it.

Abscess.

159. *Abscess* in the substance of the soft palate is sometimes met with, not uncommonly as the result of extension of inflammation, in cases of acute tonsillitis

(169); in other cases it may be due to the softening and breaking down of a gummatous deposit, or the irritation of a foreign body.

It presents itself as a soft, fluctuating swelling, causing an undue prominence or bulging forwards of the velum palati, attended by more or less pain, and when of large size, offering considerable obstruction to both deglutition and respiration.

CHAPTER XII

AFFECTIONS OF THE GUMS

Polypoid Growths

160. *Hypertrophy of the Gum*, or a simple outgrowth of gum-tissue alone, is sometimes seen, presenting itself as a more or less pedunculated, red, fleshy, polypoid growth, often projecting above and overlapping the crowns of the teeth. This condition is usually associated with uncleanly habits, or may be due to the irritation of carious teeth.

Vascular Tumours.

161. The gums, especially in the neighbourhood of the front teeth, are not uncommonly the seat of *vascular* or *nævoid growths*, generally of small size, often more or less pedunculated, and readily bleeding upon manipulation.

Epulis.

162. The term *Epulis* (ἐπι, upon, ὀυλον, the gum) is sometimes applied to any tumour situated upon the gum, but strictly speaking it should be confined to the more or less purely fibrous tumour that arises from the surface of the alveolar process, and which is in many cases connected with the periosteum, lining membrane of the alveolus, and fibrous tissue of the gum. The simple epulis is a purely fibrous tumour; in some cases, however, round and spindle (sarcomatous) cells are found mixed with imperfectly formed fibrous tissue, or myeloid cells may be present as well, and may constitute the greater portion of the growth.

The purely fibrous epulis shows no tendency to return

after complete removal, but in those cases where there is a combination of round, spindle, or myeloid cells, with imperfectly formed fibrous tissue, local recurrence is very liable to take place.

An epulis usually appears as a small, lobulated, fleshy outgrowth of the gum, in the immediate neighbourhood of or surrounding the teeth, which often project through it. It generally has a broad base, is of firm or semi-elastic consistence, growing slowly, and at times slightly ulcerating on the surface.

Epithelioma. "Malignant Epulis."

163. *Epithelioma*, or "malignant epulis," as it is sometimes termed, may attack the gum, and is to be recognised by the indurated, everted edges and irregular, ulcerated surface of the growth, which is often somewhat excavated, and at times very vascular, bleeding readily. Enlargement of the glands beneath the jaw is soon produced, and the disease, which is often attended by considerable pain, generally occurs at a later period of life than the simple epulis just described (**162**).

Mercurial Stomatitis.

164. *Mercurial Stomatitis* is characterised by redness and swelling of the gums, which feel tender and bleed readily. There is a disagreeable fœtor of the breath with profuse secretion of saliva, and the patient experiences a peculiar metallic taste. After a time ulceration occurs along the margin of the gums; sloughing of their surface ensues, the teeth become loosened and fall out, and in extreme cases necrosis of the alveolar margin of the jaw may ensue.

In Lead-poisoning.

165. In *Chronic Lead-poisoning*, a peculiar blue line is produced at the junction of the gums and teeth, and the latter, if not cleansed, become coated with a blackish incrustation and show a tendency to decay.

The other symptoms of lead-poisoning will be probably present, *e.g.* intestinal colic, muscular tremors,

and paralysis of the extensors of the forearm, giving rise to the condition known as "wrist-drop."

In Scurvy.

166. In *Scurvy*, the gums become swollen, turgid, and spongy, sometimes reaching to the level of the teeth, bleeding readily, and showing a tendency to ulcerate and slough off, exposing the fangs of the teeth or alveolar margin of the jaw.

Gingivitis.

167. Dentition in children is usually accompanied by some inflammation of the gums, which become hot, red, tender, and swollen, and at the same time slight pyrexia is often present.

Ulceration.

168. *Ulceration* of the gums is often seen in severe cases of stomatitis (**127**), cancrum oris (**53**), scurvy, salivation from mercury, &c. In some cases it may be due to extension of lupus from the cheeks; extensive sloughing of the soft tissues may result, and as a consequence exposure of the fangs of the teeth and necrosis of the jaw is often produced.

CHAPTER XIII

AFFECTIONS OF THE TONSILS

Acute Tonsillitis.

169. *Acute Inflammation of the Tonsils, Cynanche tonsillaris,* or *Quinsy,* is characterised by a rapid enlargement of the affected gland, which projects as a red and prominent swelling from between the pillars of the fauces into the interior of the pharynx. It is accompanied by more or less inflammation of the back of the pharynx and surrounding parts, pain in the throat, increased on swallowing, thickness of the voice, profuse secretion of saliva, tenderness and swelling perceptible externally about the angle of the jaw, foul tongue, and pyrexia.

If both tonsils are involved, respiration may be interfered with, especially when the patient is in the recumbent position.

If the process goes on to suppuration and the formation of an abscess in the substance of the tonsil, the swelling will increase and fluctuation will be evident. If unopened, the pus will usually make its way into the interior of the pharynx.

Acute tonsillitis is sometimes associated with the formation of an abscess in the substance of the soft palate (**159**).

Chronic Tonsillitis.

170. *Chronic Inflammation,* or *Hypertrophy of the Tonsils,* is often met with in children, and not uncommonly in young adults of a strumous or feeble constitu-

tion. Both glands are usually affected, projecting as pale, indurated, somewhat nodular masses from between the pillars of the fauces into the interior of the pharynx, where they sometimes meet and touch each other in the middle line. In some cases their surface becomes affected with superficial ulceration.

As a consequence, deglutition and respiration are more or less interfered with. The sense of hearing is often impaired ("throat deafness") (**358**), owing to thickening and congestion of the surrounding mucous membrane causing obstruction of the orifices of the Eustachian tubes. The patient speaks with a peculiar nasal twang, snores loudly at night, and breathes with the mouth half open.

The mucous membrane of the back of the pharynx is often much thickened and relaxed (**176**), and the lymphatic glands at the sides of the neck are not uncommonly also enlarged and perceptible beneath the skin (**248**).

The enlargement of the tonsils is, in many cases, the result of obstruction of the ducts of the gland, which leads to retention of mucous secretion within the follicles, and this is followed by chronic inflammatory changes in the surrounding tissue.

Syphilitic Ulceration.

171. *Ulceration of the Tonsils* very commonly occurs as the result of constitutional syphilis. Small, round ulcers, with sharply cut edges, of a superficial nature, are often present in the earlier stages, affecting both the tonsils, fauces, and back of pharynx, while at a later period deep circular ulcers are often found, due to softening and breaking down of gummatous deposits. This condition is diagnosed from epitheliomatous ulceration (**172**) by the fact that both tonsils, as also neighbouring parts, are usually similarly affected, by

the multiplicity, in many cases, and also by the symmetry of the ulcers, by the absence of induration and eversion of the edges, and by the history and other evidences of the presence of syphilis.

172. *Malignant Disease* may attack the tonsil in the form either of *sarcoma* or *carcinoma*. Malignant Disease. Carcinoma. Sarcoma.

Sarcoma, usually of the round-celled variety, is the most common variety of malignant tumour, but carcinoma is also met with in the form of *epithelioma*, *encephaloid*, or more rarely scirrhous cancer.

Epithelioma usually appears as a deep foul ulcer, with indurated and everted edges. It may attack the tonsil primarily, or be due to extension of disease from the tongue, palate, or pillars of the fauces. Sarcomata and encephaloid cancer show themselves as prominent, rapidly growing tumours, soon involving the surrounding structures, and, in the case of cancer, soon accompanied by enlargement of the lymphatic glands at the angle of the jaw and side of the neck.

The epitheliomatous ulcer may simulate that which is found in syphilis from the breaking down of a gummatous deposit (**171**), but the induration of the base and eversion of the edges of the ulcer, the rapid progress of the disease and implication of the surrounding structures (pillars of the fauces, base of tongue, and neighbouring glands), the more advanced age of the patient in many cases, the fact that no improvement results from specific treatment, and the absence of other symptoms of syphilis, will usually enable one to readily diagnose between the two affections.

173 *Calculi* occasionally form in the substance of the tonsil, give rise to a more or less painful enlargement of the gland. In some cases suppuration is set up, and Calculi.

the abscess bursting into the pharynx, the calculus may be spontaneously expelled.

Chancre.

173 *a*. In rare instances, as the result of accidental inoculation, the tonsil may become the seat of a primary syphilitic sore.

The chancre, which is always single, usually appears as a superficial ulceration with an indurated base, discharging a scanty fluid, and it is soon followed by enlargement of the glands about the angle of the jaw. The diagnosis of this condition is often somewhat difficult, especially in the early stage before any secondary symptoms have showed themselves. The history of the case and the subacute nature of the affection may, however, perhaps throw some light upon its nature.

CHAPTER XIV

AFFECTIONS OF THE PHARYNX

174. *Acute Inflammation* of the interior of the pharynx is accompanied by symptoms very similar to those of acute tonsillitis (**169**), with which affection it is often found associated. On inspection the interior of the fauces will be seen to be swollen and inflamed, and in severe cases superficial erosion and ulceration may occur in places. Pain and difficulty in swallowing are the chief local symptoms, and more or less pyrexia is generally present. If the inflammation extends to and involves the larynx the voice becomes thick and husky, and considerable dyspnœa may be produced (**313**). Acute Pharyngitis.

It may occur as the result of cold, in the course of the exanthemata (*e.g.* scarlet fever), from swallowing boiling fluids or chemical irritants. The so-called "hospital sore throat" is probably due to some poison in the atmosphere acting upon a person whose vital powers are lowered, which is often the case in those who have lived in a hospital for a considerable length of time.

175. In *Chronic Pharyngitis*, "*Relaxed throat*," a feeling of uneasiness or soreness is experienced at the back of the pharynx; the voice is often thick and husky, slight cough is generally present, and there is a constant desire to clear the throat. On examination the back of the pharynx presents a relaxed, congested, and granular appearance, the glandular follicles being more Chronic Pharyngitis.

prominent than usual, and superficial erosions and small ulcers are frequently present.

This condition, which is common amongst clergymen or those who use the voice much in public speaking, is familiarly known as "clergymen's sore throat" (**317**).

Strumous Pharyngitis.

176. In strumous children, the mucous membrane lining the pharynx is often thickened and relaxed, and the glandular follicles are hypertrophied and rendered more prominent than usual.

This condition is the result of a low form of chronic inflammation, the glandular tissue at the back of the pharynx becoming the seat of changes somewhat similar to what occur in the tonsils, for hypertrophy of these structures (**170**) is often found to coexist.

The enlargement of the lymphatic glands in the neck (**248**), so common in these subjects, is in many cases due to irritation propagated from the pharynx, in the lymphoid tissues of which a number of their radicles originate.

Syphilitic Pharyngitis.

177. In constitutional syphilis the pharynx may become affected in various ways, *e.g.*:

1. Erythema.

1. *Erythema.*—In the very early stage, and corresponding with the period of macular eruption (roseola) on the skin, an erythematous redness often spreads over the posterior surface of the pharynx, most marked on the velum palati, pillars of fauces, and tonsils, distinctly defined, usually symmetrical, and sometimes going on to very superficial ulceration.

2 Mucous Patches.

2. *Mucous Patches* or *Tubercles.*—At a stage somewhat more advanced, and corresponding with the period of papular (lichen) and squamous (psoriasis) eruptions on the skin, the same parts may become the seat of mucous patches or tubercles. These present themselves as broad, flattened, slightly raised patches, of a pale-

Syphilitic Pharyngitis.

whitish colour, circular or oval in shape, and often bilaterally symmetrical.

In many cases they become the seat of shallow ulcerations, as a result of which numerous small ulcers with sharply-cut edges, never sinking to any great depth, are seen studded over the pillars of the fauces, velum palati, and surface of the tonsils.

3. Ulceration.

3. *Ulceration.*—In the later stages of the affection, deep and perforating ulcers, due to breaking down of gummatous deposits, form in the same parts, destroying the soft palate and pillars of the fauces more or less completely (153), extending deeply into the substance of the tonsils (171), and sometimes affecting also the posterior surface of the pharynx (179).

Diphtheria.

178. In *Diphtheria*, the mucous lining of the pharynx, much inflamed and swollen, becomes coated in places with a thick, greyish-white exudation. When this separates and comes away, it leaves behind a raw, bleeding surface or distinct ulcer, which, however, soon becomes covered over again with a fresh deposit, and this spreading from the throat may involve the larynx, trachea, and bronchi.

There is considerable depression of strength, quick pulse, more or less pyrexia, albuminous urine, soreness of the throat, difficulty in swallowing, dyspnœa if the larynx becomes involved, and tenderness and enlargement of the lymphatic glands about the angles of the jaw.

Ulceration.

179. *Ulceration* of the interior of the pharynx is generally the result of constitutional syphilis (177), and in the majority of cases the soft palate (153) and tonsils (171) will be found to be more or less similarly affected.

1. Syphilitic.

2. Epitheliomatous.

In other cases it may be due to epithelioma com-

mencing primarily in its walls, or extending backwards from the tongue (**135**), tonsil (**172**), palate, or pillars of the fauces (**153**).

Stenosis of Pharynx.

180. When cicatrisation takes place in cases of syphilitic ulceration that has extended widely, destroying the soft palate, pillars of the fauces, and posterior wall of the pharynx, considerable narrowing of the arch of the fauces and adhesion of the remains of the soft palate to the pillars of the fauces and back of the pharynx may result, and in extreme cases the communication between the nares and pharynx may be completely cut off.

Prominence of Posterior Wall of Pharynx.

181. A swelling or prominence of the posterior wall of the pharynx may be due to several causes, *e.g.:*

Abscess of a simple nature, or forming in connection with caries of the cervical vertebræ (**182**).

Gummatous deposits in the soft tissue, or periosteum of the anterior surface of the vertebræ (**184**).

Tumours or *new growths*, probably of a sarcomatous nature (**184**).

Very rarely, a "*spina bifida*," presenting itself on the anterior surface of the vertebral column (**311**).

Post-pharyngeal Abscess.

182. *Post-pharyngeal* or *Retro-pharyngeal Abscess* is sometimes met with, most commonly in connection with caries of the cervical vertebræ, more rarely as an independent affection. In other cases, it is the result of injury, *e.g.* the irritation of a foreign body.

Owing to the fact that some of the lymphatics from the nasal fossæ terminate in two small lymphatic glands, situated in front of the upper portion of the spine, "retro-pharyngeal abscess may arise in consequence of disease of the nose."*

It shows itself as a more or less prominent swelling,

* Frankel, 'Ziemssen's Cyclopædia,' vol. iv, p. 127.

fluctuating or of elastic consistence, pushing forwards the posterior wall of the pharynx, interfering more or less with deglutition, and, if of large size, offering considerable obstruction to respiration.

It may occur at any age, but is most commonly found in children, and, in the majority of cases, on careful examination, evidences of cervical caries (**304**) will be seen to be present.

If occurring in adults without any evidence of spinal disease, and where the sense of fluctuation cannot be readily obtained, there may be some difficulty in distinguishing between this affection and a tumour originating in the same situation (**184**).

If left to itself, a post-pharyngeal abscess may burst into the pharynx, or, burrowing laterally, the pus may pass forwards beneath the sterno-mastoid, and point either at the side or fore part of the neck (**256**).

Pharyngocele.

183. Pharyngocele, *i.e.* dilatation and pouching of the lower part of the pharynx (cf. **193**).

Tumours.

184. Tumours are sometimes met with springing from the back of the pharynx, either of a simple or malignant nature; in many instances, especially when of softish and semi-elastic consistence, pushing before them the mucous membrane, they closely simulate a post-pharyngeal abscess, and recourse to exploratory puncture may be necessary in order to distinguish between the two affections. The tumours most commonly met with in this situation are either—

Sarcomata.

Sarcomata, springing from the periosteum, "periosteal," or originating in the interior of the bodies of the vertebræ, "central" (**312** *a*).

Gummata.

Gummata, the result of deposit of gummatous material in the soft tissues of the back of the pharynx, or in the

periosteum covering the anterior surface of the bodies of the vertebræ.

In the early stage, the diagnosis of these affections is often a difficult matter; from post-pharyngeal abscess (**182**), which is generally found at an earlier age, they can usually be distinguished by the absence of a feeling of true fluctuation, and also of any evidence of disease of the cervical vertebræ (**304**).

Gummata and sarcomata are most commonly found in adults, and in the former case there will usually be a history or other evidences of syphilis, and the swelling will either disappear under treatment, or softening and breaking down may form a deep ulcer on the posterior wall of the pharynx, and be followed by necrosis or caries of the anterior surface of the bodies of the vertebræ.

Sarcomata are distinguished by their smooth surface; their soft semi-elastic consistence with absence of fluctuation; by the fact that they are uninfluenced by treatment, but steadily increase in size, extending upwards and downwards along the anterior surface of the vertebræ, and also laterally, involving adjacent structures; at the same time they grow forwards into the interior of the pharynx, producing serious pressure effects, and ultimately cause death either from asphyxia or interference with deglutition.

Caries and Necrosis.

185. *Caries* or *Necrosis* of the anterior surface of the bodies of the cervical vertebræ forming the posterior wall of the pharynx is generally the primary cause of post-pharyngeal abscess (**182**); it may follow the softening and breaking down of gummatous deposits (**184**), or the formation of a simple abscess in this situation.

Paralysis of Muscles.

186. *Paralysis of the Muscles* of the pharynx is sometimes met with, the result of the same causes which produce a similar condition in the œsophagus (**190**).

CHAPTER XV

AFFECTIONS OF THE ŒSOPHAGUS

187. *Dysphagia*, or difficulty of swallowing, may be due to any of the following causes:— Dysphagia.

1. Affections of pharynx:—
   - Pharyngitis, acute, chronic, diphtheritic, syphilitic; ulceration of pharynx, &c. (**174—179**).
   - Tonsillitis, acute or chronic (**169, 170**).
   - Post-pharyngeal abscess (**182**).
   - Pharyngeal tumours (**184**).
   - Dilatation of pharynx (pharyngocele (**183**).
   - Stenosis of pharynx (**180**).
   - Paralysis of muscles of pharynx (**186**).
2. Affections of œsophagus:—
   - Stricture (**188**)
     - Spasmodic.
       - Hysterical or nervous.
       - Irritative or reflex.
     - Cicatricial or fibrous.
     - Carcinomatous.
   - Muscular paralysis (**190**).
   - Dilatation of œsophagus (œsophagocele) (**193**).
   - Impaction of foreign bodies (**191**).
   - Scalds (**192**).
3. Affections of larynx:—
   - Acute or chronic laryngitis, ulceration, &c. (**313—318**).
   - Œdema glottidis (**313**).
   - Ulceration about back of epiglottis (**318**).

4. Pressure of tumours outside œsophagus :—
   Glandular or other tumours in the neck (245).
   Tumours connected with thyroid gland (257).
   Aneurism : aortic, innominate, carotid, subclavian (258).
   Intrathoracic tumours, mediastinal cancer, &c.
5. Displacement of sternal end of clavicle backwards—from injury, or in connection with excessive curvature of spine.

Stricture

188. *Stricture of the Œsophagus* may be spasmodic or organic in its nature, and organic stricture may again be either simple or fibrous, or malignant or cancerous.

1. Spasmodic

Spasmodic Stricture generally occurs in young or middle-aged females of a nervous or hysterical temperament, and the obstruction is due to spasm affecting the constrictor muscles of the lower part of the pharynx rather than those of the œsophagus itself; when occurring in these subjects, it is sometimes termed "*Hysterical* or *Nervous stricture.*"

In some cases, this form of stricture is associated with some slight ulceration of the mucous lining of the œsophagus, which may be of a simple, syphilitic, or traumatic nature, the spasm being then the result of reflex irritation; under these circumstances, it is sometimes termed "*Irritative* or *Reflex stricture.*"

The diagnosis of the affection can usually be made by attention to the following points: the age, sex, and temperament of the patient; the intermittent nature of the symptoms, which are entirely absent at times, and are aggravated when the patient's attention is directed to them; the disappearance of the resistance, which is at first offered to the passage of a bougie, on making steady and firm pressure; and also its complete absence when the patient is under the influence of an anæsthetic.

2. Cicatricial or Fibrous.

Cicatricial or *Fibrous stricture* is generally the result of swallowing some corrosive fluid or boiling liquid, in consequence of which the mucous lining of the œsophagus is more or less extensively destroyed, and the cicatricial tissue which supplies its place, afterwards undergoing contraction, causes a permanent narrowing of the tube.

In rare instances, it may occur after healing has taken place in the case of ulceration affecting the œsophagus, usually of a specific character.

This form is diagnosed from cancerous stricture, with which it is liable to be confounded, by the previous history of the case, the patient having usually swallowed at a former period some caustic fluid or boiling liquid; by the smooth surface of the constriction felt on passing a bougie, very different from the rough, ulcerated surface usually found in cancer; by the fact that the patient simply brings up glairy mucus, never pus, blood, or shreds of tissue, as in cancer; by the absence of any enlargement of the cervical glands, or of any tumour perceptible in the neck; by in many cases the age of the patient, this form often occurring in young people; by the absence of any evidence of the cancerous cachexia, though after a time considerable emaciation may be produced, as the symptoms increase in severity, and nutrition is consequently interfered with.

3. Malignant or Cancerous.

Malignant or *Cancerous Stricture.*—Carcinoma usually attacks the œsophagus in the form of *epithelioma*, its other varieties (scirrhus and encephaloid) being of extremely rare occurrence. Any part of the œsophagus may be affected, but the most common situation is perhaps the upper third. The disease is rarely met with before middle life, and it generally runs a rapid course, the neighbouring lymphatic glands and surrounding

structures (most commonly the larynx and trachea), being soon involved by extension of the disease.

In the following table the main points of distinction between this and the fibrous form of stricture are laid down.

Diagnosis of Fibrous and Cancerous Stricture.

189. *Differential Diagnosis of Fibrous and Cancerous Stricture of Œsophagus.*

	Fibrous.	Cancerous.
Age . . .	May occur at any age; not uncommon in young people	Usually in middle age or advanced life.
Previous history	Some corrosive liquid or boiling fluid has usually been swallowed.	No history of any injury.
Sensation on passing bougie	Surface of stricture feels smooth and even; passage of instrument not followed by hæmorrhage.	Surface of stricture feels rough, irregular and uneven. Passage of instrument causes considerable irritation, and is often followed by hæmorrhage.
Regurgitated matter	Glairy mucus	Pus, blood, and often shreds of tissue.
Cervical glands	Not affected	Often become, after a time, secondarily affected.
External swelling	None	Often perceptible in neck when disease is advanced, from glandular implication and invasion of adjacent tissues.

Muscular Paralysis.

190. *Paralysis of the Muscles of the Œsophagus* is sometimes seen as the result of cerebral disease (*e.g.* general paralysis of the insane, glosso-laryngeal paralysis) or as one of the sequelæ of diphtheria.

The symptoms are not unlike those of stricture, but the fact that in paralysis solid substances can be often

swallowed without much trouble, while considerable difficulty attends the passage of liquids (a condition just the opposite of that which exists in stricture), will serve to distinguish between the two affections; the absence of any resistance to the passage of a bougie, the history of the case, and other symptoms present, will also assist in diagnosis.

Foreign Bodies.

191. *Foreign Bodies* are in some cases arrested in the œsophagus, and, if of considerable size, generally opposite the cricoid cartilage, or just above the diaphragm, these being the narrowest portions of the gullet; the symptoms indicating their presence are more or less irritation, with dysphagia and pain on swallowing. It not uncommonly happens that after some sharp or rough substance, such as a piece of bone, has been swallowed, the mucous lining of the œsophagus may have been slightly lacerated; under these circumstances the patient generally believes that the foreign body is still present in the œsophagus, and deglutition is, for a time, rendered painful and difficult.

If of considerable size and impacted in the upper part of the gullet, a foreign body can sometimes be detected in the neck on external examination.

Scalds.

192. Scalds from swallowing boiling fluids, involving the lower part of the pharynx and commencement of the œsophagus, are always followed by acute inflammation of the parts, with pain and difficulty in deglutition; in many cases the orifice of the larynx is involved at the same time, as a result of which œdema glottidis (**313**) is produced, and death often results from suffocation. If the patient recovers from the effects of the injury, there is always a risk of a fibrous stricture of the œsophagus (**188**) forming in after life.

Similar effects may follow the swallowing of caustic or corrosive fluids.

Dilatation. "Œsophagocele."

193. Dilatation of the œsophagus (*œsophagocele*), or of the lower part of the pharynx (*pharyngocele*), is generally found associated with stricture; much more rarely it is of congenital origin, or the result of injury, or disease (*e.g.* ulceration). It is met with in two forms, either as a distinct pouching or diverticulum at some point of the food passage, or as a general dilatation of the lower part of the pharynx or of the œsophagus itself for a greater or less portion of its length.

This condition is characterised by more or less dysphagia and regurgitation of food after a varying interval, along with the usual symptoms of stricture (**188**) when that condition is present.

In rare cases the dilated portion of the tube, when distended with food, is perceptible as a swelling at one side of the neck, which can be emptied and made to disappear on external pressure.

Rupture.

194. *Rupture of the Œsophagus* is a rare accident, which may take place during violent attacks of vomiting, usually in those in whom the walls of the gullet are weakened from disease.

It is characterised by acute pain, cessation usually of vomiting, though in some cases vomiting of blood may ensue, emphysema of the neck, and severe collapse, which generally soon terminates in death.

CHAPTER XVI

AFFECTIONS OF THE EYELIDS

Tinea tarsi.

195. *Tinea tarsi, Ophthalmia tarsi,* or *Blepharitis,* are the terms applied to a chronic inflammation of the margins of the eyelids, which has its seat in the glands and follicles of the eyelashes.

The edges of the lids become red and irritable, and there is an excessive viscid secretion which causes them to adhere together during sleep; in neglected cases small pustules form, and, these bursting, leave superficial ulcerations; at the same time the eyelashes are loosened and fall out, the edges of the lids become thickened and everted, and, in consequence of the displacement or narrowing of the puncta, epiphora (**224**) is often produced. To this, the chronic stage of tinea tarsi, the term "*Lippitudo*" is applied.

Tinea tarsi is most commonly seen in the children of the poorer classes; it is generally associated with a low state of health, often occurring in connection with the strumous diathesis.

Phthiriasis.

196. *Phthiriasis* of the eyelids is an uncommon condition sometimes seen in children, due to the presence of crab-lice (phthirius), which bury their heads in the skin at the roots of the lashes.

From the irritation produced, the margins of the eyelids present an appearance very similar to that seen in tinea tarsi, but on careful examination the presence and

movements of the little insects can generally be detected.

Hordeolum or "Stye."

197. *Hordeolum*, or *Stye*, is the term applied to an acute or subacute inflammation of the glands at the margin of the eyelids. It shows itself as a small, red, and painful swelling, which may suppurate, or remain in an indolent condition for some time, and then gradually subside.

Styes are in many cases, especially when appearing in successive crops, indicative of a low state of the general health.

Inflammation and Abscess.

198. *Inflammation* of the soft tissues entering into the formation of the eyelids may occur as the result of injury, or it may be due to simple extension of inflammation from adjacent parts, *e. g.* the face, scalp, or orbit itself; the eyelids become red, hot, painful, and excessively swollen, and, if suppuration occurs, fluctuation will be evident.

Ulceration.

199. *Ulceration* of the eyelids may be due to various causes, viz.:

1. Rodent Ulcer.
2. Lupus.
3. Epithelioma.
4. Syphilitic.

1. *Rodent ulcer*
2. *Lupus*
3. *Epithelioma*
4. *Syphilitic*

The cutaneous aspect of the eyelids, more especially the lower one, is a favourite seat of rodent ulcer; they may also become the seat of epithelioma or lupus (the general characteristics of which have been described in Table, p. 34) or of syphilitic ulcers (**200**).

Syphilitic affections.

200. *Syphilis* may attack the eyelids in the form of primary sores or chancres, or secondary or tertiary ulcers.

Chancres are of extremely rare occurrence. They usually appear as superficial or slightly excavated sores, with well-marked induration about their base; there is

not much discharge from the surface of the ulcer. The nearest set of lymphatic glands (pre-auricular and submaxillary) speedily become involved, and, unless specific treatment is adopted, secondary symptoms will soon appear.

Secondary or *Tertiary ulcers*, the result of the spreading of pustular syphilides, or of the breaking down of gummatous deposits, are more frequently met with than the primary sore. They differ from rodent ulcer and epithelioma, with which they are liable to be mistaken, by their more rapid course; by the character of their edges, which are more clean cut and punched out; by the absence of induration about their base or margins; by the fact that they are often multiple, and in many cases occur in younger subjects; by their amenability to treatment; and by a history or other evidence of the constitutional affection.

Ecchymosis.

201. *Ecchymosis*, or extravasation of blood, into the cellular tissue of the eyelids may be due to direct injury, *e. g.* a blow over the eye; or it may be secondary to effusion of blood into the soft tissues of the orbit, the result of a fracture of some portion of its bony walls.

The main points of diagnosis between these two forms of injury have been described (**46**).

Emphysema.

202. *Emphysema* of the eyelids, giving rise to a soft crepitating swelling of the parts, is a common complication of fractures of the orbit involving the frontal sinus or ethmoidal cells.

It is also often seen in cases of general emphysema extending to and involving the neck and face (**68**).

Tumours.

203. The tumours or new growths most commonly found attacking the eyelids are Meibomian or tarsal cysts (**204**), nævi (**205**), papillomata (**206**), sebaceous

or dermoid cysts (207), molluscum contagiosum (208); they also frequently become the seat of rodent ulcer (199), and much more rarely of epithelioma (199).

Meibomian or Tarsal Cysts.

204. Small, isolated, encysted tumours, due to hypertrophy or overgrowth of a Meibomian gland, are often met with in the eyelids, more especially the upper one.

They usually appear as small, hard, painless nodules, about the size of a pea; more than one is often present, and they may make their way, either inwards so as to project on the conjunctival surface, or less frequently outwards beneath the skin, which is at first freely movable over them; they may remain of small size and in a stationary condition for a considerable period, or, becoming inflamed, may sometimes suppurate.

Nævi.

205. The eyelids are sometimes the seat of *nævi*, which may be confined to the skin, or involve the whole thickness of the lid and subjacent conjunctiva; in some cases, they may be an extension of similar growths within the orbit (242).

Papillomata.

206. *Papillomata*, or warty growths, are sometimes met with attacking the margins of the eyelids. When occurring in elderly people, they should be regarded with suspicion, for, as previously stated (199), the eyelids are a favourite situation for rodent ulcer, which in many instances first shows itself in the form of a small nodule or warty growth.

Sebaceous Cysts.

207. *Sebaceous* or *Dermoid cysts* are sometimes met with in the neighbourhood of the eyelids, most commonly at the upper and outer, or lower and inner, margins of the orbit.

They are usually of congenital origin, lying at some depth from the surface beneath the orbicularis muscle, often in a depression in the subjacent bone, which in some cases may be completely perforated.

They closely resemble the similar tumours occurring on the scalp (3), differing from the acquired form of sebaceous cyst in the following points: they are more deeply situated and have no connection with the skin; they are intimately connected with the subjacent and surrounding tissues; in addition to sebaceous matter, they often contain hair in their interior.

Molluscum contagiosum.

208. *Molluscum contagiosum* sometimes attacks the eyelids, the small tumours presenting an appearance similar to that seen when the cheek or other portion of the face is similarly affected (41).

Xanthelasma.

209. *Xanthelasma*, or *Xanthoma*, are the terms applied to yellow or buff-coloured patches affecting the skin of the eyelids, most commonly in the neighbourhood of the inner canthus; the patches, which are on a level with, or very slightly raised above, the surrounding skin, have sharply defined margins.

This affection, which is most commonly met with in females beyond middle age, appears to depend upon a deposit of yellow pigment in the cells of the rete, and throughout the corium, and is in many cases found in those who have been subject to prolonged attacks of jaundice, recurrent sick headaches, or uterine disorders.

Epicanthus.

210. *Epicanthus* is the term applied to a rare condition present at birth, in which a crescentic fold of skin stretches across and overlaps the inner canthus, representing the membrana nictitans of lower animals.

Anchyloblepharon.

211. *Anchyloblepharon* is the term applied to the union of the margins of the eyelids to each other.

Symblepharon.

Symblepharon signifies an adhesion of the eyelids to the surface of the eyeball; these conditions are usually the result of injuries, *e. g.* burns, in consequence of which adhesions form between the apposed conjunctival surfaces.

Entropion.

212. *Entropion*, or inversion of the margin of the eyelids, may be of two kinds, viz.:

1. Spasmodic—the result of spasmodic contraction of the orbicularis muscle; this form is most commonly seen in old people, in whom the skin of the eyelids is loose and relaxed.

2. Organic—dependent upon structural changes leading to contraction of the palpebral conjunctiva; this is generally the result of granular or purulent ophthalmia, or of injuries or operations involving the eyelids, in which a portion of the palpebral conjunctiva has been destroyed.

Trichiasis (**214**) is generally produced, and in many cases epiphora (**224**), due to displacement or obstruction of the canaliculi, is also present.

Ectropion.

213. *Ectropion*, or eversion of the margin of the eyelid, is the opposite condition to the preceding, and may be due to a variety of different causes; *e. g.* the contraction of cicatrices on the face or eyelids in the case of wounds, burns, lupoid or other forms of ulceration, involving the soft tissues in the neighbourhood of the orbit; dropping of the lower lid with slight eversion of its margin is sometimes seen in cases of paralysis of the orbicularis, or, in the old and feeble, where the skin of the eyelid is loose and relaxed.

In consequence of the eversion of the eyelid, which varies in extent in different cases, the exposed conjunctiva becomes thickened and inflamed; owing to the displacement of the canaliculi, epiphora is present, and in severe cases, owing to the anterior surface of the eyeball being constantly exposed and deprived of its natural coverings, chronic inflammatory changes, often leading to ulceration, are produced.

Trichiasis.

214. *Trichiasis* is the term applied to an ingrowing

or displacement of the eyelashes, the result generally of contraction of the palpebral conjunctiva in cases of granular lids; owing to the friction of the eyelashes against the globe, its anterior surface becomes irritated and the seat of chronic inflammatory changes.

This condition is generally found to be present in cases of entropion (**212**).

The term *distichiasis* is applied when the eyelashes are so displaced that they are arranged in a double row.

Lachrymal Fistula

215. *Fistulous Openings*, discharging a clearish or muco-purulent fluid, are sometimes seen in the outer portion of the upper eyelid communicating with the lachrymal gland (**220**), or in the neighbourhood of the inner canthus leading down to the lachrymal sac (**223**).

Ptosis.

216. *Ptosis*, or drooping of the upper eyelid, may be due to several causes, viz.:

1. Paralysis of the third nerve or that branch of it which supplies the levator palpebræ.

2. Direct injury, *e. g.* a blow on the upper eyelid, or a wound involving the levator palpebræ.

3. Some congenital defect, *e. g.* non-development of the levator palpebræ.

4. In old subjects a slight degree of drooping of the upper eyelid is sometimes seen, apparently the result of simple relaxation and redundancy of integument.

Affections of Muscles of Eyelids.

217. The muscles of the eyelids, orbicularis, and levator palpebræ, may become the seat of spasmodic or paralytic affections.

a. Levator palpebræ.

1. *Paralysis of levator palpebræ*, causing drooping of the upper eyelid or ptosis (**216**), is generally the result of paralysis of the third nerve, or of that branch of it which supplies the muscle.

2. *Spasm of levator palpebræ*, causing the upper eye-

lid to be drawn upwards, with inability to close the eye is a condition very rarely met with as the result of some irritation, either central or reflex.

β. Orbicularis. 3. *Paralysis of orbicularis*, causing inability to close the eye, is due to paralysis of the seventh or facial nerve. This condition is generally present in cases of facial palsy, the causes and symptoms of which have been described (**58**). Owing to the relaxed condition of the lower lid, slight entropion (**212**) and epiphora (**224**) are often present.

4. *Spasm of orbicularis*, "*Blepharospasm*," leading to contraction and closure of the eyelids, may be either of a tonic or clonic character.

a. Tonic contraction of the orbicularis, causing the eyelids to be firmly closed, is found in all conditions of the eye where intolerance of light is a prominent symptom, *e. g.* corneal ulceration, granular and purulent ophthalmia, &c.

b. Clonic contraction of the orbicularis, or "nictitation," causing a frequent or almost constant blinking of the eyelids, is sometimes seen in nervous subjects. The spasm may be confined to the eyelids or may affect the muscles of the whole of the side of the face (cf. **59**).

CHAPTER XVII

AFFECTIONS OF THE LACHRYMAL APPARATUS

Inflammation of the Lachrymal Gland.

218. The lachrymal gland may become the seat of acute or chronic inflammation, and in either case the process may go on to suppuration and the formation of an abscess; the enlarged gland will form an unnatural projection at the upper and outer margin of the orbit, and when the swelling is extreme, the eyeball will be displaced downwards and inwards.

If an abscess forms, fluctuation will be evident, and if unopened, the pus will generally make its way externally, often discharging itself through the skin of the upper eyelid; in many cases a lachrymal fistula will result (220).

Cysts of Lachrymal Gland. "Dacryops."

219. *Cysts of the Lachrymal Gland—Dacryops*—due to obstruction and distension of the ducts of the gland, are sometimes seen; they usually present themselves as small, well-defined, elastic swellings in the situation of the gland, over which the skin is freely movable.

In some cases they burst externally, giving rise to the formation of a fistulous opening in the upper eyelid, through which there is a constant discharge of lachrymal secretion.

Fistula of Lachrymal Gland.

220. Small openings are sometimes seen in the outer portion of the upper eyelid, leading down to the lachrymal gland, and discharging a muco-purulent or clearish fluid.

They may be the result of a penetrating wound involving the gland, or of a lachrymal abscess (**222**), or cyst (**219**), which has burst externally.

Tumours of Lachrymal Gland.

221. The lachrymal gland is very rarely the seat of new growths of a sarcomatous or cancerous nature.

The symptoms would be identical with those characteristic of tumours of the orbit (**235**), the situation of the tumour corresponding with the position of the gland, and causing displacement of the eyeball, usually in a forward, downward and inward direction.

Inflammation of the Lachrymal Sac. "Dacryocystitis."

222. *Inflammation of the Lachrymal Sac—Dacryo-cystitis*—may be of an acute or a chronic nature, and is in the majority of cases secondary to obstruction of the nasal duct (**228**).

a. Mucocele.

When of a chronic nature, there will be increased lachrymation with distension of the sac, which will present itself as a more or less prominent swelling, "*Mucocele*," beneath the skin at the inner canthus; pressure upon the swelling will cause it to disappear more or less completely, its contents, which consist of a mucoid or muco-purulent secretion, being forced either downwards into the nose through the nasal duct, or upwards through the canaliculi.

b. Lachrymal Abscess.

When of an acute character, going on to the formation of a "*Lachrymal abscess*," there will be more pain, with redness and swelling of the parts around the sac; the lachrymal sac itself becomes tense and distended with pus, which generally discharges itself externally, making its may to the surface in most cases at a point just below the tendo palpebrarum; after the evacuation of the pus the opening may close, or a lachrymal fistula (**215**) may result.

Distension of the frontal sinus (**61**) may be mistaken for a distended lachrymal sac; in the latter case the

swelling will be below, in the former case above, the level of the tendo oculi.

Fistula of Lachrymal Sac.

223. A small fistulous opening in the neighbourhood of the inner canthus, in many cases just below the tendo palpebrarum, leading down to the interior of the lachrymal sac, and from which there is a constant discharge of tears, often mixed with pus, is a *Lachrymal fistula*, the result in most cases of a lachrymal abscess (**222**) which has burst externally, and the opening of which has never completely closed.

Epiphora.

224. *Epiphora*, or overflow of tears over the margin of the eyelid on to the cheek, may be due to several causes, *e.g.*:

1. Hypersecretion, the result of overaction of the lachrymal gland.

2. Some defect or obstruction in the lachrymal apparatus, which interferes with the escape of the tears, *e.g.*

a. Closure (**226**) or displacement (**225**) of the puncta.

b. Obstruction of the canaliculi (**227**).

c. Inflammation of the lachrymal sac (**222**).

d. Obstruction of the nasal duct from stricture, or the pressure of tumours (**228**).

Displacement of Puncta.

225. *Displacement of the Puncta* may be due to several causes, *e.g.*

Ectropion (**213**).

Entropion (**212**).

Paralysis, or a relaxed condition of the orbicularis (**217**).

Lippitudo (**195**).

Closure of Puncta.

226. *Closure of the Puncta*, partial or complete, may be due to several causes, *e.g.*

The presence of some foreign body, *e.g.* a chalky concretion, an eyelash, &c.

Inflammatory affections of the eyelids, *e.g.* tinea tarsi (195), hordeolum (197), abscess (198), ulceration (199), &c.

Tumours of the eyelids (203).

Cicatricial contraction in the case of wounds or ulceration involving the eyelids.

Obstruction of Canaliculi.

227. *Obstruction of the Canaliculi* may be produced by any of the same causes which give rise to displacement (225) or closure (226) of the puncta.

Obstruction of Nasal Duct.

228. *Obstruction of the Nasal Duct* may be due to—

1. Stricture. Stricture, or closure of the nasal duct, partial or complete, is generally the result of chronic inflammatory thickening of the mucous and submucous tissue, or periosteum, lining the interior of the canal.

This condition may arise idiopathically without any apparent cause, or as the result of injury; it may occur in strumous subjects, or as one of the evidences of constitutional syphilis; or as a consequence of periostitis or necrosis of the bones forming the walls of the duct. If a probe is passed along the duct, it will be arrested at the seat of obstruction, and, after the condition has existed for some time, inflammation of the lachrymal sac (222), with epiphora (224), will probably be produced.

2. Mechanical pressure from tumours, springing from the antrum (103), interior of nose or base of skull (84), or from any adjacent part.

CHAPTER XVIII

AFFECTIONS OF THE ORBIT

229. *Exophthalmos*, or protrusion of the eyeball, may be due to any of the following causes: Exophthalmos.

1. Inflammation within the orbit, "orbital cellulitis" (230).

2. Abscess of the orbit (230).

3. Periostitis of the orbit (231).

4. Hæmorrhage into the orbit (233).

5. Emphysema of the connective tissue of the orbit (234).

6. Tumours of the orbit, either originating in its interior, or extending into it from without (235).

7. Affections of the lachrymal gland, either inflammatory, or dependent upon the presence of new growths (218—221).

8. Distension of the frontal sinus (61).

9. Paralysis of the muscles of the eyeball, in consequence of which the globe drops forward and is rendered unduly prominent.

10. In Graves' or Basedow's disease, "exophthalmic goitre" (257), protrusion of both eyeballs is generally a prominent symptom.

11. Enlargement of the eyeball itself, the result of inflammation and suppuration in its interior (ophthalmitis), or dependent upon tumours or new growths commencing within the globe.

12. Chronic hydrocephalus (34).

Symptoms.—The degree of protrusion and direction in which the displacement takes place will depend upon the extent and nature of the disease; thus the globe may be displaced directly forwards, or in a lateral, or upward or downward direction. Double vision (diplopia) is often present; if the protrusion is so great that the eyeball is left uncovered by the eyelids, ulceration and sloughing of the cornea may result, and, owing to displacement of the puncta, epiphora (224) is often produced.

Orbital Cellulitis.

230. *Orbital Cellulitis*, or inflammation of the connective tissue of the orbit, may be produced as the result of injury, *e. g.* blows on the eye, penetrating wounds, fractures involving the walls of the orbit, the presence of a foreign body &c.; or it may be excited, independently of any injury, as the result of extension of inflammation from any of the parts in the neighbourhood of the orbit, *e. g.* erysipelas of the face or scalp.

The inflammation may be either of an acute or a chronic character, and in many cases goes on to suppuration and the formation of an abscess.

Deep-seated pain will be present, more or less acute, according to the severity of the symptoms. The eyelids become red and swollen, with chemosis of the conjunctiva; vision is affected, and there is protrusion of the eyeball, with limitation of its movements.

Abscess.

When suppuration occurs, the symptoms become more marked, and as the pus makes its way to the surface, fluctuation will be detected at the most prominent part of the swelling.

When the abscess is of a chronic nature, suppuration taking place very slowly and without being attended by any pain, the condition may simulate very closely that

produced by the presence of a tumour of the orbit, therefore in all cases when there is the slightest doubt, recourse should be had to exploratory puncture.

Periostitis.

231. *Periostitis*, when attacking the bones of the orbit, is generally of a chronic nature, and is, in the majority of cases, due to constitutional syphilis.

1. Chronic.

The nodes or periosteal swellings which result usually present themselves as firm and painful swellings; they may affect any of the four walls of the orbit, but their favourite situations are the inner portion of the orbital plate of the frontal bone, and the superior and inferior margins of the orbit.

When the swelling is of some size, and occurring at some depth within its cavity, protrusion of the eyeball may be produced, along with loss of vision consequent upon stretching of the optic nerve, and in many cases paralysis of some of the ocular muscles is also present.

Syphilitic periostitis may be accompanied or followed by orbital cellulitis, which may go on to suppuration and the formation of an abscess, and in many cases, caries or necrosis of the subjacent bones will be produced (**232**).

The same result may follow softening and breaking down of a syphilitic node.

In other cases the nodes may ossify and give rise to a syphilitic exostosis (**236**).

In cases where the lachrymal bone or adjacent parts become affected, changes may occur in the lachrymal passages, giving rise to more or less complete obstruction to the flow of tears (Epiphora, **224**).

2. Acute.

Acute inflammation of the periosteum is sometimes met with as the result of injury, *e.g.* a penetrating wound of the orbit; or it may come on during an attack of orbital cellulitis (**230**), as the result of extension of

inflammation from the cellular tissue lining the orbit to the subjacent bone. This condition is characterised by symptoms very similar to those accompanying orbital cellulitis, but the pain is generally of a more severe character, and in many cases necrosis of a portion of the walls of the orbit is produced.

Caries or Necrosis.

232. *Caries* or *Necrosis* of the walls of the orbit is generally the result of periostitis (**231**) or cellulitis (**230**), symptoms of which will generally have been present; sinuses will generally be found at some point of the margin of the orbit, discharging pus, and leading down to dead and exposed bone.

Orbital Hæmorrhage.

233. *Hæmorrhage into the Orbit* may be due to spontaneous rupture of one of the blood-vessels in its interior, but in the majority of cases it is the result of injury, and is associated with fracture either of its roof or some portion of its osseous walls.

If the bleeding is considerable in amount, the eyeball will be displaced forwards (**229**), and ecchymosis of the eyelids and ocular conjunctiva will also be produced (**201**).

Orbital Emphysema.

234. In fracture of the inner or upper wall of the orbit involving the nasal cavity or frontal sinus, air may make its way into the cellular tissue of the orbit and eyelids, and more or less protrusion of the eyeball may be produced.

Tumours of orbit.

235. Excluding the intraocular tumours (*e.g.* glioma of retina, sarcoma of choroid, &c.), the tumours met with in the orbit may be divided into two great classes, viz.:

1. *Those originating in the orbit itself*, connected with either—

Bone, *e.g.* exostosis (**236**), enchondroma (**237**), sarcoma (**243**).

Periosteum, *e.g.* nodes (usually syphilitic, **231**), fibroma (**238**), sarcoma (**243**).

Soft tissues of orbit, *e.g.* sebaceous cyst (**207**), gummata (**239**), sarcoma (**243**), carcinoma (**243**), hydatid cysts (**240**).

Blood-vessels, *e.g.* aneurism and pulsating tumours (**241**), nævus (**242**).

Lachrymal gland, *e.g.* inflammatory enlargement (**218**), new growths (**221**).

2. *Those originating at some point external to the orbit, but which in their growth have extended into the interior of that cavity* (**244**).

The general symptoms attending the presence of an orbital tumour will be as follows, varying of course in degree and severity according to the position and size of the swelling: protrusion of the eyeball (exophthalmos) (**229**), either directly forwards, or in an upward or downward, or lateral direction; limitation of the movements of the eyeball; interference with vision from pressure upon or stretching of the optic nerve; epiphora; eversion of the eyelids, and if the cornea is constantly exposed, ulceration and sloughing of its surface will result.

In cases of aneurism of the orbit (**241**) there will of course be an additional group of symptoms dependent upon the pulsatile nature of the swelling.

236. *Exostoses*, ivory or cancellous, are sometimes found springing from one of the walls of the orbit and projecting into its interior. They appear as hard, circumscribed, slowly-growing tumours, at times pedunculated, at others attached by a broad base. In some cases they may extend from the orbit and involve neighbouring cavities, *e.g.* antrum, frontal sinuses. (Cf. Leontiasis ossea (**33** *c*), Diffused osteoma (**108**). Exostosis.

An exostosis is sometimes the result of ossification of a syphilitic node (**231**).

Enchondroma. **237.** *Enchondromata* are of much rarer occurrence, but would present somewhat similar symptoms.

Fibroma. **238.** *Fibrous Tumours* are sometimes met with springing from the periosteum of the bones of the orbit. They may be distinguished by their slow growth, firm consistence, and intimate connection with the subjacent bone, with which they are usually connected by a broadish base.

Gummata. **239.** *Deposits of Gummatous matter* may occur in the cellular tissue of the orbit, independently of or in connection with syphilitic periostitis (**231**), producing almost identical symptoms.

Hydatid Cysts. **240.** *Hydatid Cysts* are sometimes met with in the interior of the orbit as soft, well-defined, fluctuating tumours, causing in many cases protrusion of the eyeball. On exploratory puncture, the clear, thin, watery character of the fluid, which often contains the heads or hooklets of the echinococci, will reveal the nature of the swelling.

Aneurism. **241.** Under the term "*Aneurism of the Orbit*," "*Pulsating Tumour of Orbit*," "*Vascular protrusion of Eyeball*," are included several very different conditions, which are characterised, however, by somewhat similar symptoms, viz. in addition to those already described as peculiar to tumours of the orbit (**235**), there is pulsation of the eyeball, sometimes perceptible to the eye, but almost always to be detected by the finger.

In some cases there is a distinct or circumscribed, pulsating swelling, affecting only a limited portion of the orbit, while in other cases the pulsation is general, affecting all parts of it.

On auscultation over the eyebrow or orbit, a distinct

bruit is often audible; singing in the ears is often present; the patient generally complains of a whizzing noise in the head, and more or less pain in the orbit.

On stooping down, or on any exertion, the symptoms are all increased in severity, while on compressing the common carotid artery on the same side they are diminished, the pulsation being arrested, and the protrusion of the eyeball more or less completely disappearing.

These symptoms may be due to several different conditions, viz;—

1. *Aneurism, true* or *false, of the ophthalmic artery*, or one of its branches—where the sac is formed by one or more of the coats of the vessel.

2. *Consecutive or diffused aneurism*—where one of the arteries of the orbit, or the sac of an aneurism (true or false), having given way, extravasation of blood has taken place, and the sac is formed by condensation of the surrounding tissue.

This is the most frequent form of orbital aneurism, and is generally due to an injury affecting the orbit or side of the head; when the result of injury, the tumour generally shows itself somewhat suddenly, and the patient is often sensible of something having given way, a kind of snap or crack being felt, along with a sudden attack of pain in the orbit.

3. *Erectile tumours*—of the nature of cirsoid aneurism and aneurism by anastomosis (7)—where the tumour is made up of a mass of tortuous and dilated arteries and capillaries packed together.

4. *Arterio-venous aneurism—i.e.* a communication between the internal carotid artery and cavernous sinus; in these cases, which are of very rare occurrence, the

condition is due simply to a dilated and pulsating vein.

5. *Compression of the ophthalmic vein.*—In some cases in which all the symptoms of orbital aneurism have been present during life, nothing has been found after death beyond compression of the ophthalmic vein as it leaves the cavity of the orbit by an aneurism of the internal carotid artery, or by a thrombus in the cavernous sinus.

Nævus.

242. *Venous Nævi*, generally of congenital origin, are often met with in the neighbourhood of the orbit; they may be situated deeply in its interior, or superficially near its margin, and in the latter case they often extend to and implicate the eyelids (**205**).

If superficial, a nævus usually presents itself as a softish, ill-defined, elastic swelling, of a somewhat bluish colour, devoid of pulsation, compressible, and becoming harder and more tense during violent expiratory efforts.

If situated deeply the diagnosis will be more difficult, protrusion of the eyeball, increased on forced expiration, being the most prominent symptom.

Malignant Growths.

243. *Malignant Growths*, of a sarcomatous or cancerous nature, springing from the bones, periosteum, or soft tissues, are sometimes found in the interior of the orbit; they are characterised by their rapid growth, ill-defined outline, and speedy implication both of the eyeball itself and adjacent parts.

Extra-orbital Tumours and Swellings.

244. *The Tumours* or *Swellings originating at some point external to the orbit and secondarily involving that cavity* include—

1. Affections of the upper jaw and antrum, *e. g.* tumours of the jaw and antrum (**103**), hydrops antri (**104**), suppuration of the antrum (**110**), &c.

2. Affections of the frontal sinus (**61**).

Extra-orbital Tumours and Swellings.

3. Tumours of the nasal fossæ, *e.g.* fibrous or sarcomatous polypi (84), cancerous polypi (84). Cf. naso-orbital tumour (84).

4. Tumours connected with the base of the skull, temporal fossæ, or any adjacent part.

In all these cases careful examination of the adjacent parts, and an inquiry into the history of the case, will reveal the fact that the orbit was only secondarily involved, as a result of extension of the growth or swelling into its interior from without.

The symptoms when its cavity is involved will be the same as in the case of tumours originating in its interior (235), preceded of course by evidence of disease in some adjacent part.

CHAPTER XIX

AFFECTIONS OF THE NECK

Tumours and Swellings of Neck.

245. In the following table (p. 144) the tumours or swellings commonly met with in the region of the neck are mentioned:

Affections of Lymphatic Glands.

246. *Enlargement*, or *Swelling, of the Lymphatic Glands* may be due to simple inflammatory causes, as in the case of simple adenitis, acute or chronic; or, it may be of a malignant nature, and due to the presence of new growths, as in the case of carcinoma or sarcoma attacking these structures.

1. Inflammatory.
a. Acute Adenitis.

247. *Acute* or *Subacute Adenitis*, or inflammation of the glands of the neck, may occur from exposure to cold, or without any apparent cause, but in many cases some perceptible source of irritation will be found in the parts where many of the lymphatic vessels commence, as, for example, in the mouth and throat, or on the face or scalp; in the case of children, it not uncommonly follows one of the exanthemata, *e.g.* measles and scarlet fever, as the result, no doubt, of irritation propagated from the nose or pharynx, which are usually found involved in these affections.

The affected gland, or glands, will be more or less painful, enlarged and perceptible beneath the skin, and tender to the touch; if the cause of irritation is removed, the inflammation will probably subside at this

stage, or it may go on to suppuration and the formation of an abscess (256).

b. Chronic Adenitis. Simple.

248. *Chronic Adenitis*, or inflammation of the glands of the neck, is a very common affection, being often met with in children of a strumous or feeble constitution, in some cases without any apparent cause; in other cases as the result of some local irritation, *e.g.* pediculi on the scalp, affections of the ear, carious teeth, enlarged tonsils, chronic inflammation of the glandular follicles at the back of the pharynx, or of the mucous lining of the nasal fossæ.

Strumous.

This condition, which is often described as "*Strumous adenitis*," usually manifests itself as an indolent and slightly painful enlargement of the glands, most commonly of those beneath the jaw or along the border of the sterno-mastoid. The affected glands may become fused together, but more commonly they remain isolated from one another, forming swellings, often unattended after a time by any pain or tenderness, more or less hard, and of uniform consistence, freely movable and rolling under the finger, the overlying skin being non-adherent and unaffected.

The glands may remain in this condition for a considerable period and resolution may then take place, or, more commonly, they break down and suppurate, giving rise to the formation of an abscess (256).

"Senile Scrofula."

*Senile scrofula.** Enlargement of the lymphatic glands of the neck, the result of chronic inflammatory changes, is sometimes met with in individuals advanced in life, who are the subjects of "senile scrofula."

This condition may be generally diagnosed from primary malignant disease of the glands (249, 251), with

* Paget, 'Clinical Lectures.'

- *Tumours or Swellings of Front or Sides of Neck*
  - Glandular
    - Inflammatory
      - Acute Adenitis (247).
      - Chronic Adenitis
        - Simple (248).
        - Strumous (248).
        - Syphilitic (248).
    - New Growths
      - Lymphadenoma (249).
      - Lymphosarcoma (251).
      - Carcinoma
        - Primary (250).
        - Secondary (250).
  - Cystic
    - Hygroma or Hydrocele (Hæmatocele) (252).
    - Sebaceous (253) (130).
    - Bursal (254).
    - Hydatid (255).
  - Abscess
    - Simple (256).
    - Glandular (256).
    - Spinal (256).
  - Bronchocele
    - Simple (257).
    - Pulsating (257).
    - Cystic (257).
    - Acute (257).
    - Malignant (257).
  - Aneurism
    - Carotid or its branches (259).
    - Subclavian (261).
    - Innominate (261).
    - Aortic (262).
  - Arterio-venous Aneurism
    - Aneurismal Varix of Carotid Artery and Jugular Vein (263).

- Muscular (sterno-mastoid) — Syphilitic (264). Traumatic (264).
- Pharyngeal and Œsophageal — Pharyngocele (183). Œsophagocele (193). Carcinoma (188). Foreign Bodies (191),
- Laryngeal and Tracheal — Tracheocele (327). Carcinoma (321).
- Vertebral — Hyperostosis (312). Sarcomata (312 *a*). Carcinoma (312 *a*).
- Other causes — Emphysema (277), &c. Other forms of Tumour not special to this region.

Tumours or Swellings of Back of Neck

- Cranial — Meningocele (2).
- Vertebral — Hyperostosis (312). Sarcomata (312 *a*). Carcinoma (312 *a*). Spina Bifida (311).
- Glandular — Enlargement of Lymphatic Glands (Suboccipital (246).
- Connected with Soft Structures — Abscess (256). Carbuncle (267). Sebaceous Cysts (269). Lipoma (268). Fibroma (19).
- Other causes — Emphysema (277). &c., &c.

which it is in the early stage very liable to be mistaken, by attention to the following points.

In scrofula the affected glands remain freely movable, forming no deep attachments; they remain separate from one another, and are of softish consistence; their rate of growth is generally very slow; there is an absence of much, if any, pain; inflammatory symptoms may be entirely absent, or there may be some tenderness on pressure, with external redness often of a dusky colour, and slight increase of local temperature; the lower cervical glands are most frequently involved in senile scrofula, while malignant disease usually attacks those at the upper part of the neck.

The patient will perhaps have been the subject of scrofulous affections during early life, and on inquiry it will probably be found that other members of the family have suffered from similar symptoms; or there will perhaps be a history of phthisis. Of course, when, as is often the case, the glands break down and suppurate, the diagnosis will be evident.

Syphilitic. In constitutional syphilis, often as a part of a general glandular infection, the suboccipital glands, those lying over the sterno-mastoid just below the ear, or those along the anterior margin of the trapezius, may become slightly enlarged and indurated; this condition, which is of a painless nature, and usually involves both sides of the neck, never goes on to suppuration.

2. New Growths. *a.* Lymphadenoma. **249.** *Lymphadenoma*, or "*Hodgkin's Disease*," is the term applied to a gradual enlargement of the lymphatic glands, which at first may be confined to a single group, as, for example, those of the neck, but which after a time tends to become generalised, the different groups of glands throughout the body becoming subsequently more or less involved. This

condition is often associated with enlargement of the spleen and development of lymphatic growths in internal organs, but differs from leucocythæmia, with which affection it appears to be closely allied, in the fact that the white corpuscles of the blood are not notably increased in number.

The glands, as they more or less rapidly increase in size, may remain separate from each other, or becoming confluent, form large lobulated tumours, which present a smooth surface and are generally of a softish, semi-elastic consistence; at first they are freely movable beneath the skin and upon subjacent parts, but as the disease progresses they become fixed, owing to infiltration of surrounding structures, often running a course, if the patient lives long enough, very similar to that seen in cases of lymphosarcoma (**251**); in fact, "Hodgkin's disease" might be described as a very generalised form of lymphosarcoma.

b. Carcinoma.

250. *Carcinoma* may attack the lymphatic glands of the neck as a *primary* affection in the form of epithelioma, scirrhus, or encephaloid cancer, but this is of very rare occurrence;* in the majority of cases it is of a *secondary* nature, being consecutive to carcinoma attacking some neighbouring part, as, for example, epithelioma of the tongue, lip, mucous lining of the cheek, tonsil, or œsophagus; in the case of cancer of the breast, the glands at the root of the neck above the clavicle often become secondarily affected.

The affected glands rapidly enlarge, forming an irregular, ill-defined, and nodulated tumour, of hard, and in some cases of almost stony consistence; as the surrounding tissues become involved, the tumour becomes fixed and immovable, and the skin covering it becoming

* Dreschfeld, 'Brit. Med. Journal,' 1881, vol. i, p. 7.

adherent often gives way at one or more points, giving rise to the formation of a foul ulcer, with indurated, everted, and thickened edges (274).

This condition, which is generally accompanied by considerable pain, usually occurs at a much later period of life than the simple inflammatory affections of the glands, being very rarely met with before middle age.

c. Lympho-sarcoma.

251. *Sarcoma*, originating in the lymphatic glands of the neck, appears as a rapidly growing tumour of soft and elastic or, at times, somewhat firmish consistence, which soon infiltrating surrounding tissues becomes fixed and immovable. Tumours of this nature are of an especially malignant nature, running a rapid course, and being soon followed by secondary deposits in the lungs and other internal organs. They not uncommonly occur in young subjects, often about puberty, and are therefore in the early stage not unlikely to be mistaken for chronic adenitis (248), from which they may be distinguished by attention to the following points, though until the disease is somewhat advanced the diagnosis is often very difficult and in some cases almost impossible.

Diagnosis from Adenitis.

In lymphosarcoma, there is usually no evident cause of irritation, nor signs of the strumous diathesis; the affected glands soon become fused together, not remaining isolated and distinct from one another; there is no tendency to suppuration; the tumour rapidly enlarging soon becomes fixed and perfectly immovable; it is not distinctly circumscribed, infiltrating and merging into surrounding parts; the skin covering it soon becomes discoloured and adherent, and often ulcerating gives way, the growth then projecting as a fungating mass; more pain is complained of; more serious pressure

effects are produced; marked cachexia is soon present; treatment has no effect.

Cystic Tumours. 1. Hygroma.

252. *Hygroma*, or "*Hydrocele of the Neck*," is the term given to a cystic tumour found in the neck, usually congenital, but in some cases occurring in after life; it may consist of a single cyst, but more commonly, and especially when congenital, it is polycystic, consisting of solid matter (usually fibrous), and numerous small cavities which usually communicate freely with one another; in some cases, the solid matter may predominate, and the swelling may then feel solid to the touch.

The congenital form of tumour appears to be of the nature of a lymphangioma, the cystic cavities contained in its interior being formed by dilatation of lymph spaces, which are filled with lymph alone, or a mixture of blood and lymph.

This form of hygroma is sometimes associated with macroglossia or hypertrophy of the tongue (**146**), the enlargement of the latter organ, under these circumstances, being due to the same cause, viz. the dilatation of the lymph-spaces contained in its substance.

The position of the tumour in one of the triangles of the neck, its superficial situation and its translucency in the case of a simple cyst, its more or less well-defined outline and sense of fluctuation, and, in the majority of cases, its congenital nature, will usually render the diagnosis easy.

"Hæmatocele."

Hæmatocele is the term given to a hydrocele of the neck when hæmorrhage from rupture of blood-vessels has taken place into its interior.

2. Deep Sebaceous Cysts.

253. In addition to the ordinary form, situated superficially (**269**), "*Deep sebaceous cysts*" are sometimes found in the anterior triangle of the neck above the level of the

omo-hyoid muscle, lying at a distance from the surface beneath the deep cervical fascia, and not unfrequently adherent to the sheath of the large vessels in this region.

They are recognised by their deep attachments, and smooth and rounded or oval shape, by the imperfect pulsation they often receive from the subjacent carotid vessels, and by the sense of deep-seated fluctuation, often perceptible on placing one finger in the mouth and the other outside upon the skin over them.

3. Bursal Cysts.

254. *Bursal Cysts*, appearing as superficial, fluctuating tumours, of rounded shape and smooth surface, moving with the larynx during deglutition, are sometimes found in the anterior part of the neck, the result of enlargement of one of the bursæ which are normally found to exist in front of the pomum Adami, and between the posterior surface of the hyoid bone and the upper border of the thyroid cartilage.

4. Hydatid Cysts.

255. *Hydatid Cysts* are sometimes met with in the region of the neck; they usually present themselves as tense, globular, elastic swellings, sometimes semi-transparent, varying in size, and containing in their interior a clear, thin, watery, non-albuminous fluid, in which will be often found the hooklets and heads of the echinococci.

Abscess.

256. *Abscess* is often found in the region of the neck in connection with strumous or other forms of inflammation of the cervical glands (**246**), caries of the cervical vertebræ (**304**), necrosis of cartilages of larynx (**320**), some local source of irritation, *e.g.* pediculi; in other cases it appears without any apparent cause, simply in connection with a low state of health.

When of an *acute* character, its formation is attended by the usual signs of inflammation, viz. pain, heat, red-

Abscess.

ness of the integuments, more or less swelling, and, as suppuration takes place, and the pus approaches the surface, fluctuation will be evident. When of a *chronic* nature, as is usually the case when due to strumous adenitis, suppuration takes place very slowly, and the pus often widely undermining the skin and superjacent tissues is slow in pointing and coming to the surface.

When the abscess has burst and discharged its contents, the cavity does not in many cases readily close, and, as a result, a sinus, or so-called "strumous ulcer," is left behind (272).

In cases where suppuration takes place at a considerable distance from the surface beneath the deep fascia, giving rise to the formation of a "*deep cervical abscess*," the pus being bound down and unable to discharge itself externally, may burst into the trachea or œsophagus, or make its way into the pleural cavity or anterior mediastinum, and a fatal result may ensue from one of these complications or from general blood poisoning.

When thus affected, the side of the neck becomes hot, swollen, brawny and œdematous; the swelling, which is ill-defined, is tender on pressure, and pain is generally produced on any movement of the head; there may be but slight redness of the superjacent integuments, and owing to the pus being bound down by the deep fascia, fluctuation is often absent or very indistinct, deglutition and respiration may be more or less interfered with owing to pressure upon the œsophagus and trachea, and severe constitutional disturbance is often present.

Bronchocele.

257. The *Thyroid Gland* is subject to various forms of enlargement, to which the term *Bronchocele* or "*Goitre*," is generally applied.

1. Simple.

Simple bronchocele.—In this affection there is a simple

hypertrophy of the thyroid gland, which may attain a considerable size, so as to form a prominent swelling in the fore part of the neck. Both lobes are generally involved in this general enlargement, which is most commonly met with in young females, and is often associated with some menstrual irregularity.

In its severer forms this affection is endemic, in this country prevailing especially in Derbyshire, hence it is sometimes termed "*Derbyshire neck.*" In rare instances, a simple bronchocele may undergo calcareous degeneration, and inflammatory changes may subsequently be excited, leading to the formation of an abscess.

The shape of the swelling and its situation corresponding with that of the gland or one of its lobes, its slow growth, its very frequent occurrence in females, and its movement with the larynx during deglutition, will usually assist in the diagnosis of this affection.

2. Cystic. *Cystic bronchocele.*—In this form of enlargement, the hypertrophy of the gland is accompanied by the formation of cystic cavities in its interior, containing a viscid or thin and watery fluid; the cysts may be multiple and of small size, or few in number and under these circumstances of large dimensions.

3. Pulsating. *Pulsating Bronchocele, Exophthalmic Goitre; Graves' or Basedow's disease*, are terms applied to a pulsating enlargement of the thyroid body, in which the hypertrophy of the gland, not usually very great, is accompanied by dilatation of its blood-vessels.

The gland, which is enlarged and somewhat softish, pulsates synchronously with the carotid artery; it is generally associated with palpitation of the heart, marked pulsation in the vessels of the neck, and prominence of the eyeballs, or "exophthalmos."

For the diagnosis of this affection from carotid aneurism, with which it may be confounded, cf. (259).

Acute bronchocele is a rare affection in which the gland undergoing a rapid enlargement attains a considerable size in the course of a few weeks. 4. Acute.

Malignant bronchocele.—Carcinoma and sarcoma may attack the thyroid gland, but are of very rare occurrence. 5. Malignant.

258. A circumscribed tumour in the course of one of the large arteries or at the root of the neck, more or less compressible, exhibiting pulsation of an excentric or expansile character, with well-marked bruit perceptible when the ear is placed over it, is probably an *aneurism* connected with the carotid, subclavian, or innominate arteries, or perhaps springing from the arch of the aorta. Cervical Aneurism.

259. An aneurism of the carotid artery is generally situated near its bifurcation, the upper portion of the vessel being affected much more commonly than the lower one. Carotid Aneurism.

Aneurism of the upper portion of the carotid artery usually presents itself as a small, well-defined ovoid tumour, with distinct, expansile pulsation and well-marked bruit; compression of the vessel below the tumour suspends both pulsation and bruit, and at the same time it becomes soft and diminished in size; on withdrawing the pressure, the tumour refills in a certain number of beats. As it increases in size, from pressure upon the pharynx, œsophagus and larynx, deglutition and respiration become interfered with, and as a result of interference with the supply of blood to the head cerebral symptoms may be produced, *e.g.* giddiness, impaired vision, noises in the ear, &c.

Aneurism of the secondary carotids, more commonly the internal, is sometimes found; while of the branches of the external carotid, the temporal artery is the one most frequently involved, usually as the result of injury.

Diagnosis

Diagnosis.—The principal affections with which a carotid aneurism is liable to be confounded are glandular or other tumours, abscess, and enlargements of the thyroid gland. When situated at the root of the neck, it may be confounded with an innominate, subclavian, or aortic aneurism. For the chief points of diagnosis between these varieties, cf. (261).

1. Glandular or other Tumours.

Glandular or other tumours may be distinguished by the solid, and, in many cases, irregular or nodulated character of the swelling; the nature of the pulsation, which, if transmitted, is a simple heaving up and down of the tumour and not of an expansile character; the possibility of raising the tumour more or less completely from the subjacent artery, when the pulsation will cease; the absence of any diminution in the size of the swelling on compression of the vessel below; and the fact that, upon the removal of pressure from the vessel below, the pulsation returns in the tumour at the first renewed beat of the artery as strongly as ever, (and not only after a certain number of beats, as in the case of an aneurism), will usually assist in distinguishing a glandular or other tumour lying over the large blood-vessels from an aneurism affecting the upper part of the carotid artery.

2. Abscess.

Abscess.—The presence of distinct fluctuation, its more rapid formation, the absence of expansile pulsation and of any diminution in the size of the swelling on compression of the vessel below, a history or the presence of symptoms of inflammation, more or less marked, along

with perhaps a reddened condition of the integuments covering it, will in most cases serve to distinguish a simple abscess lying over the vessels from a carotid aneurism.

3. Bronchocele.

Bronchocele.—In cases where one lobe only of the thyroid gland is enlarged, extending laterally over the carotid artery and having pulsation transmitted to it, or in cases of pulsating bronchocele (257), where the swelling pulsates by virtue of its own inherent vascularity, the diagnosis, which at first may appear somewhat difficult, can usually be made by attention to the following points :

1. Though one of the lobes may be chiefly involved in bronchocele, yet the isthmus is always more or less enlarged.

2. In bronchocele the mesial portion of the tumour is that which is most firmly fixed ; while in aneurism it is the most external portion, viz. that which lies beneath the sterno-mastoid muscle.

3. During deglutition the enlarged gland moves with the larynx ; in the case of aneurism, the tumour remains immovable.

4. If a bronchocele is raised up from the subjacent vessels, the pulsation which it exhibits more or less completely ceases; this is not the case in aneurism.

Aneurism at Root of Neck.

260. *An Aneurism at the Root of the Neck* may be connected with the carotid, subclavian, or innominate arteries, or possibly with the arch of the aorta ; in the following table are laid down the main points of distinction between the three first varieties, but in many cases, unless the condition comes under observation at an early period, it is impossible to determine with which vessel the aneurism is connected.

261. *Diagnosis of Carotid, Subclavian, and Innominate Aneurism.*

Diagnosis of Carotid, Subclavian, and Innominate Aneurism.

	Carotid.	Subclavian.	Innominate.
Situation of tumour in early stage	Between sternal and clavicular origins of sterno-mastoid	External to clavicular origin of sterno-mastoid, in posterior and inferior triangle of neck	Behind sternum, or at inner border of sternal origin of sterno-mastoid, often displacing inner end of clavicle; often forms a prominence above sternum, and between the sternal attachments of the two sterno-mastoids.
Shape . .	Elongated more vertically than transversely	More elongated transversely	Generally globular.
Bruit . .	Propagated more along neck than towards arm	Propagated more along arm than towards neck	Best heard behind sternum; may be absent.
Pulse . .	Diminished in vessels of head and neck on the same side; radial pulse usually unaffected, unless tumour of large size pressing on subclavian artery	Not affected in vessels of head and neck on same side, unless tumour of large size pressing on carotid artery. Radial pulse weakened or absent	Weakened in both r. carotid and subclavian arteries; may be entirely absent in r. radial.
Upper extremity	Not usually affected.	Often painful and œdematous from pressure on brachial plexus and subclavian vein	Often painful and œdematous on right side.

Aneurism of Arch of Aorta.

262. *An Aneurism springing from the Arch of the Aorta* may appear at the root of the neck, behind or

even above the upper margin of the sternum, and may then simulate an innominate or carotid aneurism, but there will generally be a more general bulging of the chest walls, a larger area of dulness on percussion behind the sternum, and usually more serious pressure effects.

Arterio-venous Aneurism.

263. *Arterio-venous Aneurism* is the term applied to an abnormal communication between an artery and a vein, the result either of injury or disease. It comprises two different conditions, viz.:

Aneurismal varix—when the artery and vein directly communicate.

Varicose aneurism—when the artery and vein do not directly communicate, but an aneurismal sac is formed between the two, into which the blood passes after leaving the artery, and before entering the vein.

Aneurismal Varix.

Aneurismal varix of carotid artery and jugular vein may occur as the result of wounds in the neck involving these vessels; it shows itself as a soft, oblong, somewhat irregular, compressible tumour, and if situated near the surface, the skin covering it will be of a bluish colour; it exhibits pulsation, but not of the distinct expansive character peculiar to a true aneurism; on auscultation a loud rasping bruit can be heard; if the carotid artery is compressed below, the pulsation will cease, and the tumour can be partially emptied of blood.

Varicose aneurism involving these vessels is a condition so rare as to be almost unknown.

Affections of Sterno-mastoid. 1. Induration or Tumour.

264. *Induration of the Sterno-mastoid muscle* is sometimes found in new-born children, appearing usually a few days after birth; this condition is by some believed to be due to congenital syphilis, but in the majority of cases it appears to be the result of injury or rupture of the fibres of the muscle, as it is generally found to be

Affections of sterno-mastoid.

associated with difficult or instrumental labours, and as a rule disappears without any specific treatment.

When occurring in adults, it is usually of a syphilitic nature, the result either of an interstitial inflammation or gummatous deposits (which may appear as distinct tumours) in the substance of the muscle; the gummy tumours are most frequently situated in the lower portion of the muscle near its sternal attachment.

2. Torticollis or Wryneck.

265. *Torticollis or Wry-neck.*—In this deformity which is due to contraction of the sterno-mastoid muscle, the head is twisted, so that the ear is approximated to the sternal extremity of the clavicle of the affected side, while the chin is turned in the opposite direction (*i.e.* towards the opposite shoulder).

The affected muscle is contracted and shortened, usually standing out prominently beneath the skin.

This condition may be due to several causes, *i.e.*

Congenital; in the majority of cases, torticollis is due to congenital causes, coming on shortly after birth, though it may not attract attention for some time.

Caries of cervical vertebræ; in these cases, evidence of disease in the spine will be found on examination (**304**), the contraction of the muscle being due to reflex irritation.

Some source of irritation; *e.g.* worms, inflammation of the cervical glands, &c.

Hysteria; this form is usually found in young unmarried females, who will be found to present other evidences of hysteria; under these circumstances the contraction is not constant, often disappearing for a time.

Exposure to cold, muscular rheumatism, syphilitic infiltration (**264**), &c.

3 Spasmodic Torticollis.

266. *In Spasmodic Torticollis* the spasm is not con-

stant, but is of a clonic character, producing a convulsive to-and-fro movement of the head, which never ceases, except for brief intervals, while the patient is awake; in many cases other muscles are also involved, *e.g.* the trapezius, scaleni and deep muscles of the neck.

This affection, which is always very intractable, is probably dependent upon some central irritation propagated along the spinal accessory nerve.

Anthrax or Carbuncle.

267. The nape of the neck, or just below, between the shoulders, is a favourite situation of *anthrax* or *carbuncle*, a localised, but slowly-spreading inflammation of the skin and subcutaneous tissue.

It usually commences as a flattened, but slightly elevated, indurated swelling, with dusky redness of the skin covering it, attended from the first with considerable pain; as it gradually increases in size, the skin gives way at various points, and numerous sloughs are exposed, which are always slow in separating.

The swelling is usually about two inches in diameter, but in some cases it may attain much larger dimensions, *e.g.* five or six inches.

The constitutional symptoms attending this affection are usually of a low type, and when occurring in those suffering from exhausting diseases, or in a low state of health, the prognosis is often very unfavorable.

A carbuncle is distinguished from a boil or furunculus by its much larger size, its dusky redness, its broad flattened character, the multiplicity of the sloughs, and their deeper and more extensive character, the small amount of discharge, the severe constitutional disturbance often present, and the special conditions under which it appears.

Lipoma.

268. *Lipomata*, or *Fatty Tumours*, are not uncommonly found in the neighbourhood of the back of the neck or

shoulders, appearing as slowly-growing, soft, semi-elastic swellings; often distinctly lobulated and in some cases reaching large dimensions; they are usually unattended by any pain, and seldom give rise to much inconvenience unless from their size.

When the skin is moved over a fatty tumour, or if its base is compressed so as to make the skin tense over it, slight dimpling is often produced, owing to the skin being more closely attached and bound down to the interspaces between the lobules of the tumour than to other parts.

These growths are liable to few degenerations, and are of an innocent nature, not recurring after removal; a curious fact in connection with them is that they occasionally shift their position, slowly travelling to some distance from their original situation.

They may be diagnosed from chronic abscess, with which they are liable to be mistaken, by the absence of fluctuation, their soft solid feel, their lobulated surface, the dimpling of the skin over them, and their slow growth; in some cases, when the diagnosis is difficult, recourse to exploratory puncture may be required.

The neck is sometimes the seat of the *diffused fatty tumour*, an ill-defined, non-encapsuled outgrowth of adipose tissue, which, without constituting a distinct disease, may give rise to considerable deformity; this condition may affect any part of the neck, and when attacking the front often gives rise to the so-called "double-chin."

Sebaceous Cyst.

269. *Sebaceous Cysts* are not uncommonly met with about the back of the neck and shoulders, presenting characters very similar to those described as occurring on the scalp (6).

They may be distinguished from lipomata by their

more distinct and regular outline, with absence of lobulation; their more intimate connection with the skin, which does not glide over them; their more elastic feel, and, as a rule, their smaller size; the presence in some cases, of a black speck on their surface, indicating the orifice of an obstructed hair-follicle, and through which sebaceous matter can be forced out; the absence of dimpling when the base of the tumour is compressed, though slight dimpling may be produced when an attempt is made to raise the skin from the tumour.

Eruption on Nape of Neck.

270. The nape of the neck is a favourite situation for the early syphilitic eruptions, *e.g.* the papular and squamous syphilides, and in many cases the rash will be found to extend round the margin of the scalp and forehead, giving rise to the so-called "corona veneris."

Sinus.

271. Owing to the non-closure of the cavity of an abscess in the neck (256), a sinus or narrow channel may result, burrowing for a considerable distance beneath the skin, discharging a thin, unhealthy, purulent fluid, and having its orifice usually concealed by a mass of projecting granulations.

Strumous Ulceration.

272. As the result of suppuration, in or around the lymphatic glands in strumous subjects, ulcers are often formed of a very chronic and intractable character.

They may be single, or appear in groups, and are generally somewhat irregular in shape; their edges, on a level with the surrounding surface, or very slightly thickened, are usually much undermined, and the surrounding skin is congested and of a dusky or purple colour; the surface of the ulcer is uneven and covered with large flabby granulations, which often project above the level of the skin and discharge a thin, curdy, unhealthy pus.

Strumous Scars.

273. The cicatrix, which is left after healing has taken place in the case of strumous ulceration of the neck (or indeed in the case of any slowly healing wound), is usually somewhat deep coloured, dense, thick, heaped-up, puckered, and cord-like, being raised above the level of the surrounding integument in the form of little ridges or tongues of skin.

Cancerous Ulceration.

274. The *cancerous ulcer* is sometimes seen in the neck, in cases where the lymphatic glands having become affected with carcinoma (**250**), the skin covering them has also become infiltrated and the seat of ulceration.

The appearance of the ulcer, formed under these circumstances, is always very characteristic; its base is generally irregular, discharging a fetid, sanious pus, its edges are raised, everted, and considerably thickened, while the surrounding integuments are much indurated.

This form of ulceration usually occurs at a much later period of life than the strumous (**272**), and on examination evidence of carcinoma will generally be found in some neighbouring part.

Rodent Ulcer.

275. *Rodent Ulcer* is sometimes found attacking the neck, presenting an appearance similar to that described (p. 34).

Fistulous Openings in Neck.

276. *Fistulous Openings in the Neck* may be due to several different causes.

1. Simple Sinus.

1. *Simple sinuses*, due to the non-closure of the cavity of an abscess, are often seen (**271**).

2. Aerial Fistula.

2. *Aerial fistulæ*, viz. communications with the larynx or trachea, are sometimes found, as the result of wounds involving the air-passages (**282**).

3. Pharyngeal and Œsophageal Fistula.

3. *Pharyngeal and œsophageal fistulæ*, viz. communications with the pharynx or œsophagus, are rarely

seen as the result of wounds involving the food-passages (282).

4. *Branchial fistulæ*, viz. narrow canals or channels, present at birth, opening externally by minute orifices, and running backwards towards the pharynx or œsophagus, with which they rarely communicate, are sometimes seen. The external openings of the fistula, of which there may be more than one, sometimes two or three, are generally situated along the anterior border of the sterno-mastoid muscle, more commonly just above the sterno-clavicular articulation.* 4. Branchial Fistula.

These fistulous channels, which often secrete a clear, mucoid fluid, appear to be due to incomplete closure of the branchial clefts or fissures which are present during early fœtal life; they are often found associated with some other deformity, *e.g.* malformations of the external ear (328), macrostoma (94), &c.

277. *Emphysema* of the neck, due to the presence of air in the subcutaneous connective tissue, gives rise to a puffy swelling, soft and compressible, communicating to the finger pressed upon it a peculiar cracking sensation. Emphysema.

This condition may be due to several causes, viz.:

1. Extension of the same condition from the face (68), or chest, where there has been fracture of the ribs with injury to the lung.

2. Wounds of the neck involving the air-passages, when the external wound is small, or does not correspond in position with that in the larynx or trachea (278).

3. Injuries to the neck involving the air-passages, but without any external wound, *e.g.* fracture of the

* Paget, 'Medico-Chirurg. Trans.,' vol. lxi.

cartilages of the larynx (285), rupture of the trachea (286), rupture of œsophagus (194).

4. Ulceration of the cartilages of the larynx or trachea, leading to perforation, and allowing of the escape of air into the surrounding tissues (318).

5. Fractures of the base of the skull involving the mastoid cells (38).

Cicatricial Contractions following Burns.

277 *a*. When cicatrisation takes place in the case of burns about the neck, there is often a tendency for the chin to be drawn down towards the sternum, as a consequence of which considerable deformity is often produced; in many cases, eversion of the lower lip and immobility of the jaw also result.

It not unfrequently happens that the cicatrices of burns in this situation become the seat of keloid (of Alibert) tumours (70).

CHAPTER XX

INJURIES OF THE NECK

Wounds of Throat.

278. *Wounds of the Throat* are, in the majority of cases, of suicidal origin; they may be divided into two great classes, viz.:

Superficial, involving the skin alone, or skin and superficial structures.

Deep, involving the large blood-vessels, pharynx, œsophagus, or some portion of the air-passages, *e.g.* larynx or trachea. In some cases, all the soft parts may be divided down to the spinal column, and when the wound is situated at the back of the neck, the cord itself and its membranes may be divided; under these circumstances the symptoms will be very similar to those accompanying fracture of the spine with compression of the cord (**303**).

If in front, the wound may be situated as follows:

1. *Above the hyoid bone*, involving the floor of the mouth and dividing the base of the tongue; wounds in this situation are often accompanied by considerable hæmorrhage from injury to the lingual artery, and if the tongue is completely divided, its base may fall back over the orifice of the larynx and produce death from suffocation.

2. *Through the thyro-hyoid membrane*, dividing the epiglottis or tips of the arytenoid cartilages; these structures, if they fall back into the larynx, may offer considerable obstruction to respiration, or, setting up severe spasm, may cause death from suffocation.

3. *Through the larynx*, dividing the thyroid, or cricoid cartilages, or crico-thyroid membrane.

4. *Through the trachea*, dividing the windpipe, either partially or completely.

If the wound is above the level of the cricoid cartilage, it may involve the pharynx; while if below the œsophagus itself may be injured.

In cases where the air-passages are wounded, air will bubble in and out of the wound during respiration, and when the external wound is small, or does not correspond in position with that in the larynx or trachea, emphysema (**277**) is very liable to supervene.

When the pharynx or œsophagus are involved, food will probably pass out of the external wound on attempts to swallow. If any of the large blood-vessels are divided, the hæmorrhage may be so profuse as to cause almost instant death.

Immediate Dangers.

280. *The Immediate Dangers* attending a wound of the throat are—

1. Death from hæmorrhage, which is liable to occur if the large vessels (carotid artery, jugular vein) are divided.

2. Death from asphyxia, either from blood flowing into the trachea, or from portions of tissue which have been either partially or completely divided falling over or into the larynx, exciting spasm of the glottis, and in this way causing obstruction to respiration.

3. Death from entrance of air into one of the large veins, especially those at the root of the neck.

Secondary Dangers.

281. *The Secondary Dangers* coming on in the course of a few days are—

1. Inflammation of the larynx, leading to œdema glottidis (**313**).

2. Inflammation of the parts below the larynx, leading to bronchitis and pneumonia.

3. Interference with deglutition, in cases where the food-passages are wounded.

4. Inflammation of the soft tissues round the seat of injury, going on to suppuration and the formation of abscess.

Remote Complications.

282. The more *remote complications* coming on at a variable period are—

1. Fistulæ opening externally and communicating with some part of the food- or air-passages, or leading from the one to the other.

2. Constriction or narrowing of the trachea or larynx (" stricture "), and possibly also of the œsophagus itself, when cicatrisation takes place in the case of wounds involving these structures.

3. Modification or entire loss of voice, especially in cases where the vocal cords have been involved.

Fracture of Hyoid Bone.

283. *Fracture of the Hyoid Bone* sometimes occurs as the result of blows, falls, attempts at strangulation, death from hanging, &c.

The injury is characterised by the presence of crepitus, with more or less displacement and mobility of the fragments; pain is experienced on any movement of the parts, as in attempts to speak or swallow.

Dislocation of Hyoid Bone.

284. *Dislocation of the Hyoid Bone*, or rather displacement, so that its normal relations to the thyroid cartilage are somewhat altered, is an accident of extremely rare occurrence.

Fracture of the Cartilages of Larynx.

285. *Fracture of the Cartilages of the Larynx* may be caused by injuries similar to those which produce fracture of the hyoid bone (**283**), the thyroid cartilage, from its more prominent position, being the one most commonly involved; this accident is most likely to

occur in old subjects in whom calcification of the cartilages of the larynx has taken place. The injury is characterised by more or less displacement of the parts, pain and difficulty of breathing, and constant cough; when the mucous lining of the larynx is lacerated, spitting of blood is often present, and not uncommonly emphysema may be produced.

Rupture of Trachea.

286. *Rupture of the Trachea*, without any external wound, has been known to occur from similar injuries, the windpipe having in some cases been torn completely across.

The injury is characterised by a depression at the seat of rupture, and is soon followed by extensive emphysema (**277**); great dyspnœa is produced, and death from asphyxia is very likely to occur.

In rare instances a rupture or rent in the treachea is produced as the result of violent respiratory efforts, *e.g.* in croup or whooping-cough in children; in severe attacks of bronchitis; in the violent expiratory efforts of parturition.

Scalds or Burns of Larynx.

287. *Scalds of the Larynx* often occur in young children from the accidental swallowing of boiling water; as the direct result of the injury, the interior of the pharynx or larynx becomes the seat of acute inflammation, and œdema glottidis (**313**) is often produced; this, if severe, speedily destroys life from suffocation. The same result sometimes follows the swallowing of corrosive liquids, or, in the case of burns, from the direct inhalation of the flames.

Foreign Bodies in the Air-passages.

288. It not unfrequently happens, especially in children, that foreign bodies, *e.g.* portions of food, bones, coins, fruit-stones, buttons, pins, &c., are inhaled or drawn from the mouth into the larynx by the current of air, the result of a sudden or deep inspiration;

another common accident is the impaction of a large portion of food in the lower part of the pharynx, which by obstructing the orifice of the larynx may cause death from asphyxia.

A foreign body may be lodged—

1. At the orifice of the larynx, just above the rima glottidis.

2. In the interior of the larynx, *e.g.* in one of the ventricles, or between the vocal cords.

3. In the trachea.

4. In one of the bronchi or their subdivisions; if a foreign body is not arrested in the trachea, it passes more commonly into the right bronchus, for though this bronchus lies more horizontally than the left, yet it is of somewhat larger size, and the septum between the two is placed slightly to the left of the median line.

The *symptoms* attending the entrance of a foreign body are those of irritation of the air-passages and obstruction to respiration, viz. fits of spasmodic cough, great dyspnœa and a feeling of suffocation; they vary, however, considerably with its size and shape, and also with its situation, for the larger and rougher the foreign body and the nearer it is situated to the vocal cords, the more urgent are the symptoms.

If situated in the larynx, the symptoms are generally very severe, and death often speedily results from spasm of the glottis; in other cases, there is a feeling of intense suffocation and urgent dyspnœa, with constant cough, aggravated from time to time; respiration is stridulous, and the voice is altered or lost; pain is often experienced in the neighbourhood of the larynx, and the foreign body can sometimes be felt from the mouth, or be detected with the laryngoscope. In Larynx.

If situated in the trac hea, the symptoms are usually In Trachea.

less severe, and there are often long intervals of freedom from spasm, which is, however, often excited on any movement of the body, or on violent expiratory efforts, by which the foreign body is driven up so as to strike against the larynx; in many cases the patient will be conscious of its movements up and down the trachea.

If the ear is applied to the front of the chest, the foreign body, if loose, can be often heard moving up and down in the windpipe; if fixed, its position can be often determined by the obstruction which is offered to the free passage of air beyond it during inspiration.

In Bronchi. *If situated in one of the bronchi,* the entrance of air into the corresponding lung will be partially or entirely prevented; consequently there will be a more or less complete absence of respiratory murmur, without dulness on percussion, while in the opposite lung the breath sounds will probably be exaggerated.

In Subdivision of either Bronchus. *If situated in one of the subdivisions of either bronchus,* the same conditions will be present in the lobe connected with the obstructed bronchus (which may become collapsed), though air passes freely into the remainder of the lung.

Secondary Effects. **289.** Supposing a foreign body is not extracted or expelled, and that death does not result from spasm of the glottis, inflammation of the air-passages (laryngitis or bronchitis) will probably be set up, and this extending to and involving the lung (pneumonia) will be very liable to be followed by a fatal result, or, the foreign body, if situated in one of the bronchi, may ulcerate into the lungs and ultimately give rise to all the symptoms of phthisis; or, making its way into the pleura, may give rise to empyema.

If smooth and round, it may occasionally remain impacted in the lower part of the trachea, or one of its

Foreign Bodies in the Air-passages.

divisions, without giving rise to any severe symptoms, and in some cases, after a long period, the foreign body may be ultimately coughed up by the patient, or be discharged through an abscess or fistulous opening in the chest walls.

CHAPTER XXI

INJURIES AND AFFECTIONS OF CERVICAL SPINE

Injuries.

300. The injuries to which the cervical portion of the spinal column is subject are sprains or twists, dislocations, and fracture.

Sprains.

301. Severe strain or stretching, and even laceration, of the ligaments connecting together the cervical vertebræ is followed by pain and aching in the back of the neck, more or less swelling over the affected part, along with stiffness and inability to move the head from side to side, or to and fro.

Dislocation.

302. Pure dislocation of the spine can for anatomical reasons (*e.g.* the greater mobility of the cervical vertebræ and the horizontal aspect of their articular processes) only occur in the cervical region, such an injury being almost impossible in the dorsal and lumbar portions of the column. The upper vertebræ are generally thrown forwards upon the lower, the spinal cord being more or less pressed upon and crushed between them.

The lower cervical vertebræ, third to seventh, are those which are most usually displaced, the fifth most commonly, and in the majority of cases the dislocation is associated with fracture.

Dislocation of the atlas from the occipital bone has been known to occur, but is very rare.

Dislocation of the axis from the atlas is of more frequent occurrence, and it may happen with or without

fracture of the odontoid process; it may result from injury or disease (*e.g.* softening and giving way of the transverse ligament which holds it in position).

The symptoms of dislocation are those of compression of the spinal cord, and are almost identical with those of fracture (**303**), the two conditions being generally associated together.

Occasionally the displacement is only momentary, the vertebræ, by the elasticity of the structures connecting them together, at once recovering their normal position; under these circumstances there may be no marked paralysis as the immediate result of the injury, but it may supervene after an interval of several days, as the result of inflammatory changes set up in the spinal cord or its membranes.

303. A fracture of the cervical portion of the spine, *Fracture.* involving the arch or body of the vertebra, attended with displacement of the fragments and compression of the cord *opposite to or above the third cervical vertebra* (*i.e.* above the origin of the phrenic nerve) is usually immediately fatal, death from asphyxia being produced owing to paralysis of the diaphragm and muscles of respiration.

In fracture of the odontoid process, the result of injury; or separation, the result of disease (*e.g.* caries of the cervical vertebræ), death is usually instantaneous, owing to the sudden pressure of the displaced portion of bone upon the medulla oblongata.

When the fracture takes place at any point *between the third cervical and first dorsal vertebra*, paralysis more or less complete of both upper and lower extremities is generally produced; breathing is much interfered with, owing to paralysis of the muscles of respiration, inspiration being entirely diaphragmatic; owing to loss of

power in the sphincter ani and the muscular walls of the bladder, there are involuntary evacuations of fæces and retention of urine, subsequently followed by incontinence, the result of overflow from a distended bladder.

An accumulation of gas takes place in the intestines, giving rise to tympanitis, and if the patient lives long enough cystitis is set up, the urine becoming ammoniacal and alkaline in reaction.

Sensation is entirely lost in the parts supplied by nerves given off below the seat of fracture, bed-sores soon form, and priapism is generally present.

The temperature of the paralysed part varies, being sometimes much higher than normal, while in other cases it is considerably lowered.

Death generally results in the course of a few days (in the majority of cases within three) from a gradual process of asphyxia, the result of imperfect respiration.

When the displacement of the fragments is slight, the parts below the seat of injury may be only partially paralysed; under these circumstances considerable pain is generally experienced at the seat of fracture, and hyperæsthesia is often found to exist at the line of junction of the paralysed and sound parts of the body, owing to compression and irritation of the nerves that issue from the intervertebral foramen at the seat of fracture.

If the fracture involve the *sixth cervical vertebra*, the upper extremities will be only partially paralysed.

In the majority of cases some abnormal projection or displacement of the spinous processes will be perceptible at the seat of injury.

If the fracture involve only the top of the spinous process, mobility of the fractured portion of bone, with crepitus and more or less stiffness, swelling, and pain

may be the only symptoms necessarily connected with the injury. When the fracture involves the cilio-spinal region of the spinal cord, contraction of the pupil is often observed. (The "cilio-spinal centre," from which oculo-pupillary fibres issue controlling the movements of the iris, is contained in that portion of the cord which corresponds with the two lower cervical and two upper dorsal vertebræ.)

304. The earliest symptoms of *caries*, which usually commences in the bodies of the cervical vertebræ (less frequently in the intervertebral cartilages), are as follows: *Cervical Caries.*

1. *Stiffness and rigidity of the neck*, so that the head is constantly fixed in a certain position; nodding and rotation of the head are impossible, and the patient, when he wishes to look round, has to twist the whole body, owing to loss of motion between the affected vertebræ, and muscular spasm, the result of reflex irritation.

2. *Pain*, at the seat of the disease or radiated to some distant part, either constant or paroxysmal, and increased on certain movements, *e. g.* on a sudden jar or shock, as, for example, on coming downstairs, jumping from a chair on to the floor, on a sudden cough, or sneeze, &c.

Pain is usually experienced on rotating, tapping, or pressing downward the head, and in some cases on tapping or applying a hot sponge to the affected portion of the spine.

In disease of the first or second cervical vertebræ, pain is often referred to the back of the head, following the distribution of the suboccipital and great occipital nerves.

In disease of the lower cervical vertebræ, pain is often

felt over the shoulders, along the arms, or in front of the upper part of the chest, following the distribution of the cervical nerves and brachial plexus.

In order to ease the pain, some device is often present for relieving the spine of the weight of the head, *e. g.* the patient often supports the chin or occiput with the hands, or rests the head upon a chair.

In the later stages, when the disease is more advanced, some of the following symptoms may be present, viz.:

3. *Angular curvature* (Pott's curvature) or undue prominence of the spines of the affected vertebræ, as the result of destruction and fusion together of the bodies of the diseased vertebræ.

4. *Thickening* of the soft tissues over the affected vertebræ.

5. *Slight increase of temperature* over the affected portion of the spine.

6. *Abscess*, which may present behind the pharynx (post-pharyngeal, **182**) or pass forwards beneath the sterno-mastoid to the side or front of the neck (**256**); when the abscess discharges its contents, portions of necrosed bone may come away, exfoliating into the pharynx and being coughed up by the patient, or escaping through a sinus in the neck.

7. *Sinuses* about the neck, in some cases leading down to diseased bone, only present in the later stages after suppuration has occurred.

8. *Paralysis:* though in the majority of cases the spinal cord usually escapes, yet in some instances paralysis, more or less complete, may be produced as the result of pressure upon the cord by the displaced vertebræ, or in consequence of inflammatory changes set up in its membranes (pachymeningitis).

9. *Sudden death* may be produced when the axis is affected, as the result of giving way of the ligaments which hold in position the odontoid process; under these circumstances, this portion of bone being suddenly displaced backwards presses upon the medulla oblongata and causes sudden death.

305. *Spondylitis Deformans*,* a form of *Chronic Rheumatic Arthritis*, may attack the cervical portion of the spine, the vertebræ becoming anchylosed together by masses of bone deposited upon their external surface, at the same time that absorption of their articular surfaces and intervertebral cartilages takes place. Rheumatic Arthritis. "Spondylitis Deformans.

This condition is characterised by rigidity and stiffness, with more or less thickening of the affected portion of the spine, and is distinguished from cervical caries (304) by the fact that the patient is usually more advanced in years; by the absence of much, if any, tendency to destruction of the bodies of the vertebræ and consequent production of angular curvature, though there may be a general bowing of the spine (306); by the absence of any tendency to suppuration and the formation of abscess; by the presence or history of other symptoms of rheumatism, though in many cases the spine may be the only part affected; by the character of the pain, which is often worse at night and influenced by the weather; by the more extensive nature of the affection, the whole of the spinal column being often involved, as also its articulations with the ribs, so that the movements of the chest walls are often interfered with, respiration being in advanced cases entirely abdominal.

306. Curvature of the spine may be due to several causes, appearing under three chief forms. Curvature of Cervical Spine.

* Allen Sturge, 'Clinical Soc. Trans,' vol. xii.

Curvature of Cervical Spine.

1. Angular.

307. 1. *Angular Curvature*, due to caries and destruction of the bodies of the vertebræ, followed by a sharp projection backwards of their spinous processes, is (on account of the small size and depth from the surface of the spines of the cervical vertebræ) never so marked a symptom in the neck as it is in cases where the dorsal region of the column is involved. Paralysis of the spinal cord from pressure upon its substance or from inflammatory changes set up in its membranes (pachymeningitis) may attend this form of curvature, though as a general rule it is not present (**304**).

2. General Bowing.

308. 2. *General Bowing*, or arching backwards, of the spine is sometimes seen in children, the subjects of

a. Rickets.

rickets, owing to simple relaxation of the ligaments and muscles connecting together and supporting the bodies of the vertebræ. The lower portion of the cervical spine is usually involved in the general or diffused curve, which is of a very different character to the sharp angular projection associated with disease of the bodies of the vertebræ; in many cases a certain amount of lateral displacement accompanies the general arching backwards.

In extreme cases the bodies of the vertebræ may become somewhat compressed on the concave side of the curve.

b. Spondylitis Deformans.

In cases of *spondylitis deformans* (**305**), there is often a general bowing or arching backwards of the cervical spine, very different to the sharp projection of angular curvature, but resembling that affection in being accompanied by rigidity and stiffness of the neck.

c. Osteitis Deformans.

In cases of *osteitis deformans*,* exaggeration of the normal curvature of the cervical spine (as also in the

* Paget, Medico-Chirurg. Trans.,' vol. lx.

dorsal and lumbar regions), with considerable rigidity, is sometimes seen.

This condition appears to be due to contraction and hardening of the fibrous and ligamentous structures of the spine, the vertebræ themselves generally remaining healthy and separate from one another; in some cases, however, they have been found much hypertrophied, undergoing changes identical with those seen in the bones of the cranium and extremities (cf. **33** *b*).

309. 3. In *lateral curvature*, due to relaxation and weakening of the muscles and ligaments of the spine, the lower cervical vertebræ are generally involved in the upper or dorsal curve, the convexity of which usually looks towards the right shoulder; or, in extreme cases, a third, independent or compensatory curve is sometimes produced in the cervical portion of the spine. This form of curvature is usually met with between the ages of 12 and 18 years, much more commonly in girls than boys. The displacement is not a purely lateral one, for the bodies of the vertebræ are in addition somewhat rotated or twisted upon each other in such a way that, while the anterior surfaces of the bodies of the vertebræ look towards the convexity of the curve, the spinous processes occupy the concavity; on this account the deformity is sometimes called "rotation curvature." 3. Lateral.

When the deformity has lasted for some time, the bodies of the vertebræ will often be found somewhat compressed on the concave side of the curve.

In rare cases of caries affecting chiefly one side of the bodies of the vertebræ, a lateral displacement may be produced instead of the ordinary angular curvature backwards, but under these conditions a certain amount of displacement backwards is always present as well,

and the lateral curve is always limited, being confined to the affected vertebræ instead of involving the whole column, as in the true lateral or "rotation" curvature. Lateral curvature may also be produced when collapse of the walls of the thorax has taken place in cases of pleurisy or empyema.

It is often present in cases of shortening of either lower extremity from any cause, *e. g.* morbus coxæ, &c., the obliquity of the pelvis causing a lumbar curve, and this is compensated for by a dorsal curve in the opposite direction, which may involve the lower cervical vertebræ.

Rigidity of Spine.

310. *Rigidity* or *Stiffness* of the cervical spine, causing the patient to hold the neck more or less completely fixed and interfering with the movements of the head, may follow an injury to the back of the neck (**301**), or it may be due to *anchylosis of the bodies of the vertebræ*, *e. g.* in caries of the spine (**304**), spondylitis deformans (**305**), or *simple muscular contraction*, *e. g.* in torticollis (**265**); in the very early stage of caries of the cervical spine, before anchylosis has taken place, stiffness of the neck, due to simple contraction of the muscles from reflex irritation, is always a prominent symptom (**304**).

It is also present in some cases of osteitis deformans (**308**), the result either of simple contraction of the ligaments, or of changes in the vertebræ themselves.

Spina Bifida.

311. *Spina Bifida* is the term applied to a congenital hernia, or protrusion, of the membranes of the cord through a cleft in the arches of the vertebræ, owing to their incomplete closure.

Though this condition is more common in the lower dorsal or lumbar region, it is occasionally met with in the cervical portion of the spinal column.

The sac of the tumour, which is formed by the skin

and membranes of the cord (dura mater and both layers of arachnoid), usually contains in its interior subarachnoid or cerebro-spinal fluid, and sometimes in addition the pia mater and spinal cord itself.

Less frequently the fluid contents of the tumour, containing no sugar, consists simply of the serous secretion of the arachnoid space itself, and not, as in the previous case, of cerebro-spinal or subarachnoid fluid;* under these circumstances, the coverings of the sac are also different, comprising the integument, dura mater, and outer layer of the arachnoid alone.

In very rare instances a protrusion of the membranes may occur between or through the bodies of the vertebræ, on either their anterior or lateral surface, giving rise to the presence of a tumour on the front or lateral aspect of the spinal column,

It usually appears as a soft, fluctuating tumour, partially or almost entirely reducible, increasing in size and becoming tense when the child cries or makes any violent expiratory efforts.

When of small size, the skin covering the tumour may be of its normal colour and appearance, but when large, it is much thinned and in some cases almost transparent.

312. *Hyperostosis* or enlargement and thickening of the cervical vertebræ may be due to simple overgrowth or hypertrophy, or it may be the result of osteitis deformans (**308**) or chronic rheumatic arthritis (**305**). Hyperostosis.

In these affections, irregular masses of bone (osteophytes) are sometimes found overspreading or projecting from the surfaces of the vertebræ, causing anchylosis, and in some cases producing more or less thickening and fulness at the back and sides of the neck.

* Gould, 'Lancet,' 1882, vol. i, p. 737.

In other cases the bony outgrowths may be circumscribed and defined, having a narrow base of attachment, and resembling more in their nature a simple *exostosis*.

Sarcomata.

312 *a. Sarcomatous Tumours* springing from the periosteum ("periosteal"), or originating in the interior of the bodies of the vertebræ ("central"), sometimes attack the cervical vertebræ.

They are characterised by their rapid growth and serious pressure effects (*e. g.* pressing upon the spinal cord, or interfering with deglutition and respiration): if the patient lives long enough they are generally followed by secondary deposits in internal organs (lungs, liver, &c.).

In some cases they may project anteriorly forming a prominence at the back of the pharynx (**184**), while, at other times, making their way laterally or posteriorly, they may give rise to thickening or the presence of a tumour at the sides or back of the neck.

Carcinoma.

Carcinoma may in rare cases attack the bones of the spinal column as a secondary affection, most commonly consecutive to cancer of the breast.*

"The symptoms of malignant disease in the spine are of the same general character as those of other destructive diseases in the vertebræ. Malignant disease does, however, in most instances, exhibit one prominent feature, which would at once distinguish it with certainty from other spinal diseases if it were of constant occurrence; this is the very severe pain in the vertebræ, and, besides, the severely painful affections of the parts supplied by the nerves issuing from the diseased portion of the spine.

"Thus, almost invariably, in malignant disease of the

* Cæsar Hawkins, 'Medico-Chirurg. Trans.,' vol. xxiv.

Carcinoma.

vertebræ, the pain in the back has been constant and agonising. But unfortunately, in some few cases it has been decidedly otherwise, and the impaired sensation and motive power in the limbs were not preceded or accompanied by any pain in the diseased vertebræ; the symptoms are exactly such as attend the ordinary forms of spinal disease.

"So far it may be confidently stated that the existence of constant and severe pain in the spine, in conjunction with the symptoms of disorganisation in the spinal cord, are strong grounds for apprehending that the vertebræ are attacked by malignant disease, but that the absence of severe pain in the spine is not sure evidence of the disease in it being otherwise than of a malignant nature."*

Irregularities of the Spinous Processes.

312 *b*. Irregularities in the length, thickness, shape, and direction of the spinous processes of the cervical vertebræ are sometimes met with as simple malformations and independent of any disease (*e. g.* Caries, **304**); in some cases their tips are abnormally bifid, or they may be obliquely twisted to one side.

* Stanley, 'Diseases of the Bones,' p. 342.

CHAPTER XXII

AFFECTIONS OF THE LARYNX AND TRACHEA

Acute Laryngitis.

313. *Acute Inflammation of the Interior of the Larynx* may occur as the result of exposure to cold; or it may come on in the course of some of the exanthemata; or as a consequence of extension inwards of erysipelatous inflammation. In many cases it is of traumatic origin, following wounds or injuries of the throat, larynx, or windpipe, or the swallowing of boiling fluid, corrosive liquids, &c.; it may also result from over-use of the voice in speaking, shouting, singing, &c. A special form of laryngitis, peculiar to children, is known by the name of croup (**314**); while in cases of diphtheria the larynx is sometimes involved as the result of extension of inflammation from the throat (**316**).

Acute laryngitis generally begins with unpleasant sensations (*e. g.* soreness, burning, or tickling) at the back of the throat and orifice of the larynx, increased on coughing or speaking; swallowing is painful; the voice becomes hoarse and is soon, more or less, completely lost; cough is usually a prominent symptom, and attended with some expectoration; respiration is interfered with, considerable dyspnœa being often produced; more or less pyrexia is generally present.

If the disease advances, the dyspnœa increases in severity, respiration becoming noisy and laboured, and the pulse weak and intermittent; symptoms of imper-

fect aeration of the blood appear, and death ensues, either suddenly from spasm of the glottis or from gradually increasing obstruction to respiration, the result of œdematous infiltration of the submucous tissue lining the interior of the larynx (œdema glottidis). "Œdema Glottidis."

On examination with the laryngoscope, the laryngeal mucous membrane will, in the early stage, be seen to be turgid and of a bright red colour, and when œdema glottidis is present, the epiglottis and aryteno-epiglottidean folds will be found much swollen and congested, so as to prevent inspection of the interior of the larynx.

314. *Croup*, or *Cynanche Trachealis*, is an acute inflammation of the larynx peculiar to childhood, characterised by the deposit of a peculiar exudation or false membrane on the mucous membrane lining its interior, and which in many cases also extends to and involves the trachea. Croup. Cynanche Trachealis.

This affection usually sets in during the night, in many cases suddenly and without any premonitory symptoms; the voice is hoarse, or completely lost; paroxysms of hard, dry, ringing cough come on from time to time, and the cough is interrupted by a shrill, whistling, or crowing inspiration. A little viscid mucus is sometimes brought up, and the expectoration may oocasionally consist of shreds or patches of the false membrane.

Respiration is greatly interfered with, being very laboured and attended by violent efforts; more or less pyrexia is generally present. The symptoms are not persistent, being worse at night, when the paroxysms are always aggravated. In fatal cases the dyspnœa increases, the respiration becomes still more laboured, and is attended by sucking-in of the chest walls; the pulse becomes small and thready and the face livid;

symptoms of imperfect aeration of the blood show themselves, and sooner or later death ensues.

Examination with the laryngoscope is scarcely practicable in these cases, but if it can be employed, the false membrane lining the interior of the larynx might possibly be seen.

The dyspnœa, which is so prominent a symptom, is due not only to the presence of the false membrane, which mechanically obstructs the entrance of air into the air-passages, but also to spasm (or, as some assert, to paralysis) of the muscles of the interior of the larynx, excited by the inflammation.

Laryngismus Stridulus. "Spurious Croup."

315. *Laryngismus Stridulus*—"*Spurious Croup*"—is a spasmodic affection of the muscles of the glottis occurring in young children. The affection usually comes on suddenly at night when the child is asleep; the chief symptoms are attacks of dyspnœa with loud crowing inspiration ("child-crowing"), lasting often for several minutes, then suddenly ceasing and leaving the patient quite well between the paroxysms. Pyrexia is generally absent, and there is no affection of the voice nor cough, symptoms which distinguish it from true croup (**314**).

This affection is of nervous origin, the result either of some central or reflex irritation, and is in many cases accompanied by general convulsions; the subjects of it often present evidences of scrofula or rickets, and in the latter condition it has been suggested that the spasm is due to pressure upon the brain when the child lies upon its back, owing to the thinning and perforation, in some cases, of the occipital and parietal bones (cf. Craniotabes, **29**).

Diphtheritic Laryngitis.

316. In some cases of diphtheria (**178**) the disease may spread from the throat to the larynx, and the

mucous membrane lining its interior may then become the seat of the deposit characteristic of this affection. It may be distinguished from the other forms of laryngitis by the fact that diphtheria is either epidemic or there is a history of contagion; the general symptoms of diphtheria will have preceded the implication of the larynx, and on examination of the throat the peculiar deposit will probably be evident; enlargement of the glands about the angles of the jaw will almost invariably be present; epistaxis will probably occur from time to time; and, on examination of the urine, it will generally be found to contain albumen. As one of the sequelæ of diphtheria, paralysis of the muscles of the larynx is sometimes seen.

Chronic Laryngitis.

317. *Chronic Inflammation of the Interior of the Larynx* may depend upon constitutional causes, *e.g.* phthisis, syphilis; or, it may remain as the sequel of the acute form of inflammation; it may result from excessive use of the voice, or may be produced in consequence of some cause of irritation extending from the throat or acting upon the larynx itself, *e.g.* inhalation of irritant matter, excessive smoking, ulceration, or growths in the larynx, &c. The appearances produced in the larynx vary in different cases, but, as a general rule, its mucous lining is more or less congested, hyperæmic, and thickened; in some cases its surface is dry and shining, or it may be swollen and œdematous, discharging an abundant secretion.

In *glandular* or *follicular laryngitis*, which usually accompanies "clergyman's sore throat" (**175**), the mucous glands of the larynx, which are the structures chiefly involved, become enlarged and prominent.

In *phthisical larynyitis* there is, in many cases, a deposit of tubercle beneath the mucous membrane cover-

ing the epiglottis and lining the larynx; this is very prone to break down and ulcerate, in consequence of which erosion and destruction of the cartilages are not uncommonly produced.

Syphilitic laryngitis may be met with either as a secondary or tertiary affection.

In the secondary stage, the affection of the larynx may be due to the spread of inflammation from the throat (**177**), or less commonly, the larynx itself may be primarily involved, and erosion and superficial ulceration of its mucous lining may be produced.

In the tertiary stage, there is often a deposit of gummatous material in the mucous and submucous tissues of the larynx, and this, softening and breaking down, is often followed by ulceration, which extending deeply may cause extensive destruction of the cartilages and vocal cords.

The symptoms characteristic of chronic laryngitis are as follows: a feeling of discomfort and uneasiness about the larynx, worse after speaking or reading aloud; alteration in the voice, which may be hoarse, harsh and cracked, or much weakened and almost entirely lost. Cough is generally present, of a constant irritating and tickling nature, or it may come on from time to time in severe paroxysms; it is usually attended by more or less expectoration, and the patient has often a constant desire to clear the throat: dysphagia is sometimes complained of. When the larynx is much obstructed, either from chronic thickening or from œdema of the soft parts, more or less dyspnœa will be produced, with stridulous inspiration; and when ulceration has taken place severe spasm of the glottis will be liable to occur.

Ulceration.

318. *Ulceration* of the mucous membrane lining the interior of the larynx may be due to several causes, *e. g.*:

Ulceration.

In simple laryngitis, acute or chronic, ulceration of a superficial character is often present.

In phthisical laryngitis, the under surface of the epiglottis, the vocal cords, and adjacent parts often become the seat of ulceration, which, in many cases, is the result of the softening and breaking down of deposits of tubercle.

In syphilitic laryngitis, during the secondary stage, ulceration of a superficial nature is often seen ; while in the tertiary stage, as the result of softening and breaking down of gummatous deposits, deep ulcers are very apt to form and necrosis of the subjacent cartilages often ensues. If cicatrisation takes place, the contracting scars often narrow the calibre of the larynx, and considerable obstruction to respiration is consequently produced.

The symptoms indicative of ulceration of the larynx are as follows: hoarseness and alteration in the voice, which may be almost entirely lost ; attacks of coughing, with expectoration of pus, blood, and shreds of tissue; dysphagia, pain being especially experienced when the epiglottis is involved ; respiration is often noisy ; attacks of spasm of the glottis are liable to occur, giving rise to urgent dyspnœa.

On examination with the laryngoscope, the mucous membrane will present evidences of chronic laryngitis (317), and distinct ulcerations will be seen in different places.

Constriction or Narrowing of Larynx or Trachea. "Stricture."

319. *Constriction or narrowing* of the larynx or trachea—"*Stricture*"—may occur when cicatrisation takes place in the case of external wounds or injuries (*e. g.* burns, scalds) involving these parts (282). The same condition may also be produced when repair has occurred in cases of ulceration (318) attacking the

interior of the larynx. Voice will be altered or entirely lost, more or less obstruction will be offered to respiration, and considerable dyspnœa is often produced.

Necrosis of Cartilages.

320. *Necrosis of the Cartilages* of the larynx may occur in cases of ulceration attacking its interior (**318**). Portions of the cartilages may become detached and be coughed up by the patient; abscesses often form in the surrounding parts, and these discharging externally, sinuses are left in the neck leading down to the diseased tissues.

Tumours.

321. Various forms of *tumours or new growths* are found in the interior of the larynx, and though they may occur at any part, they are more frequently situated in front, near the convergence of the vocal cords.

Papillomata or warty growths, are not at all uncommonly met with as sessile growths about the size of a pea, and frequently multiple.

Fibromata, fibro-myxomata, fibro-sarcomata, are not so common, but when present, they usually appear as pedunculated growths, like the polypi met with in other parts.

Sarcomata and *carcinomata* are sometimes seen, the latter usually in the form of epithelioma, which though it may attack the larynx as a primary growth, yet is in many cases due to simple extension of disease from the pharynx or œsophagus.

The other varieties of tumour sometimes met with, viz. *lipomata, vascular* or *cystic growths, enchondromata,* are of exceedingly rare occurrence.

The *symptoms* will vary with the situation, size, and nature of the growth; voice is generally altered, and is liable to sudden changes, being at one moment almost natural, while at the next it is hoarse, or partially or

completely lost. Respiration is generally affected; more or less dyspnœa is present, aggravated at intervals, when severe suffocative attacks, due to spasm of the glottis, are often produced. Cough is generally present, and in some cases fragments of the growth are expelled in the expectoration.

Laryngoscopical examination will generally reveal the presence of the growth; when the surrounding tissues have become involved, as may happen in cases of epithelioma, the growth may give rise to a fulness or tumour perceptible externally in the neck.

Dyspnœa.

322. *Dyspnœa*, or difficulty of breathing, is produced in all cases where there is any obstruction to the passage of air through the larynx or windpipe; it may depend upon many different causes, viz.:

1. Some cause of internal obstruction, tumours of the larynx (321), foreign bodies in the larynx or trachea (288).

2. Inflammatory affections of the larynx, acute (313) or chronic (317) laryngitis.

3. Ulceration of the larynx (318).

4. Spasm of the glottis (325).

5. Some cases of paralysis of the muscles of the larynx (324).

6. Constriction or narrowing of the larynx or trachea, the result of cicatrisation after injury or ulceration (319).

7. External pressure upon the larynx, trachea, or recurrent laryngeal nerves by growths or tumours in the neck or thorax.

Aphonia.

323. Aphonia, or loss of voice, may be partial or complete; the patient may speak in a whisper, or the voice may be hoarse and husky, or completely lost. This condition may be produced by any of the same causes

which give rise to dyspnœa (**322**) ; it is also present in cases of fistula communicating with the windpipe or larynx (**327**). Aphonia, or loss of voice, must not be confounded with *Aphasia*, viz. loss of the faculty of intelligent speech, the result, not of changes in the larynx, but of some affection of the cerebral centre which presides over speech.

Paralysis of the Muscles of the Vocal Cords.

324. *Paralysis of the Muscles of the Vocal Cords* may be due to various causes.

1. Tumours, or growths, in the larynx (**321**).

2. Ulceration of the larynx (**318**).

3. Pressure on the pneumogastric or laryngeal nerves by tumours in the neck or thorax (aneurismal, glandular, &c.).

4. Injuries, or surgical operation, involving the recurrent laryngeal nerves.

5. Hysteria, syphilis, chronic lead or arsenical poisoning.

6. Diseases of the nerve centres, *e. g.* tabes dorsalis, progressive cerebral paralysis (*e. g.* glosso-laryngeal paralysis).

7. As a sequel of various acute diseases, *e. g.* diphtheria (**316**), typhus fever, &c.

Four chief varieties of paralysis of the muscles of the larynx are described, viz. :

1. *Paralysis of adductors* (crico-arytenoidei laterales and arytenoideus).

a. Bilateral.—" Hysterical or functional aphonia." There is complete loss of voice, or the patient perhaps speaks in a scarcely audible whisper.

Laryngoscopical examination shows that the vocal cords are separated and remain immovable during attempts at phonation.

Paralysis of Muscles of Vocal Cords.

b. Unilateral.—The voice is altered and often assumes a falsetto character.

Laryngoscopical examination shows that the vocal cord on the affected side does not act during attempts at phonation.

2. *Paralysis of abductors* (crico-arytenoidei postici).

a. Bilateral.—The voice is not much affected, but may be harsh; there is considerable dyspnœa with noisy stridulous inspiration.

Laryngoscopical examination shows that the vocal cords lie close together near the median line, and do not separate when an inspiration is taken.

b. Unilateral.—The voice is not much affected, but more or less dyspnœa is present, with noisy inspiration.

Laryngoscopical examination shows that the affected vocal cord does not move during respiration, but lies near the median line.

3. *Paralysis of tensors* (crico-thyroidei).—The voice becomes deep and hoarse, and the production of high notes is difficult or impossible.

Laryngoscopical examination shows that the surfaces of the vocal cords are not quite horizontal and their edges not perfectly straight.

4. *Paralysis of relaxors* (thyro-arytenoidei).—In paralysis of these muscles, whose office it is to relax the vocal cords, the ligamentous part of the glottis remains open, while juxtaposition of the arytenoid cartilages takes place.

On laryngoscopical examination a minute elliptical opening may often be discovered between the cords.

325. In *spasm of the muscles of the glottis* the vocal cords suddenly become approximated to one another; if the orifice of the glottis is completely closed, there will be complete arrest of respiration and apnœa if

Spasm of Glottis.

only partially, there will be stridulous inspiration and considerable dyspnœa.

This condition may depend on various causes, viz.:

Acute and chronic inflammation of the larynx (313—317), croup (314).

Ulceration of larynx (318).

Burns and scalds, or other injuries involving the larynx (287).

Tumours of larynx (321).

Foreign bodies in larynx or trachea (288).

Tumours external to larynx or trachea, pressing upon the laryngeal nerves (245).

Some central irritation, *e. g.* in tetanus, hydrophobia, many cases of laryngismus stridulus (315).

Some reflex irritation, *e. g.* laryngismus stridulus in children from teething, worms, &c. (315).

Leprosy of Larynx.

326. In cases of *Leprosy*, the mucous membrane of the larynx, as also that lining the mouth and pharynx, may become affected with the tubercles and patches of ulceration characteristic of the disease.

This condition is characterised by more or less dysphonia, the voice becoming shrill and often completely lost; at the same time cough and dyspnœa are generally present, and the patient will show evidences of the disease on the face (43) and other parts of the body.

Tracheocele.

327. *Tracheocele* or "*Aerial Goitre*," is the term applied to a hernial protrusion of the mucous membrane of the windpipe between the rings of the trachea, giving rise to the presence of a tumour, resonant on percussion and reducible on pressure, perceptible externally in the neck; this condition is of extremely rare occurrence.

Aerial Fistulæ.

327 *a. Aerial Fistula.* (Cf. 276).

CHAPTER XXIII

THE EAR

Affections of the Auricle

328. *Malformations of the Auricle*, or external ear, are sometimes seen. Malformation.

Complete absence or *imperfect development* of the auricle is occasionally met with, and in many cases these conditions are associated with defect or absence of the external auditory canal.

Supernumerary auricles are sometimes found, situated on the cheek or side of the neck, and at times this deformity is associated with macrostoma or congenital fissure of the cheek (**94**).

Congenital fistulæ, the result of non-closure of the first visceral cleft, are rarely found, opening just in front of the tragus and extending for a variable distance, sometimes as far as the tympanic cavity; in some cases the external opening is situated on the helix. Associated with these congenital fistulæ we sometimes find supernumerary auricles, or the external ear may be imperfectly developed; in some cases, similar openings are found at the side of the neck (**276**).

Absence of some portion, or of the whole, of the auricle may be due to a congenital arrest of development, or it may be the result of injury or of disease, *e.g.* epithelioma, lupus, rodent ulcer, syphilitic ulceration (**335**). Absence.

Cutaneous Affections.

329. The auricle may become the seat of various cutaneous affections, *e.g.* eczema, impetigo, herpes, pemphigus, erythema, erysipelas, &c.

It may also become the seat of syphilitic ulceration, epithelioma, lupus, or rodent ulcer (**335**).

Tumours.

330. The auricle may become the seat of various tumours or morbid growths; those most commonly met with are sebaceous cysts (**322**), hæmatomata (**331**) fibrous or keloid tumours (**333**), and nævoid growths (**334**). Epitheliomata, enchondromata, and sarcomata are of rare occurrence. It may also become the seat of tophi or chalk-stones (**337**).

Hæmatoma or Blood-Cyst.

331. A *Hæmatoma*, or blood-cyst, is often found as the result of effusion of blood between the perichondrium and cartilage of the auricle. Two varieties are described, the idiopathic and traumatic, according as the extravasation of blood takes place spontaneously or as the result of injury.

The *idiopathic* form usually appears in those who present evidence of insanity, and it is believed to depend upon some morbid condition of the brain, in consequence of which dilatation of the vessels of the ear, followed by rupture and effusion of blood, is produced; when occurring spontaneously in apparently healthy individuals, who present no evidence of mental disease, a "hæmatoma auris" should therefore be regarded with suspicion, as indicating a tendency to the development of insanity.

Its formation is usually preceded by flushing and congestion of the auricle, which feels hot and painful; effusion of blood then rapidly takes place, and in the course of a few hours the swelling reaches the size of a walnut or small egg, presenting itself as a somewhat hot, tense, and fluctuating tumour, situated most com-

Hæmatoma.

monly on the anterior surface of the auricle; more rarely it is situated upon its posterior aspect, the lobule always escaping.

The tumour may remain in a stationary condition for some time, or it may rupture spontaneously and discharge its contents; in some cases suppuration may occur, or a gradual absorption of the effused blood may take place, and in consequence of this, considerable distortion and deformity of the auris is often produced.

The *traumatic* form is produced as the result of injury, *e.g.* a blow on the ear, and is found in persons who are perfectly healthy and present no evidence or suspicion of insanity.

External violence may also act as the exciting cause in the case of the insane, who, as just described, are supposed to be naturally predisposed to this affection.

Sebaceous Cyst.

332. *Sebaceous Cysts* are not at all uncommonly met with in the auricle, presenting characters similar to those found on the scalp (**6**).

Fibrous or Keloid Tumours.

333. Small tumours, varying in size from a pea to a walnut, or even larger, consisting of fibrous tissue, or of a mixture of fibrous tissue and spindle cells (fibro-sarcomata), are sometimes found attacking the lobule, growing round the perforations which have been made for ear-rings in women.

Vascular Tumours.

334. *Vascular Tumours* or *Nævoid Growths* may involve the auricle or lobule, either as primary affections or spreading from the scalp (**4, 7**) and adjacent tissues; they usually present themselves as soft, compressible, bluish or reddish swellings, in which pulsation may often be detected.

Epithelioma. Lupus. Rodent Ulcer.

335. *Epithelioma* (**44**), *lupus* (**44**), and *rodent ulcer* (**44**) sometimes attack the auricle as primary affections, and after destroying more or less extensively

the superficial structures, may gradually extend inwards, involving the external auditory canal and deeper parts of the ear.

Enchondromata. Sarcomata.

336. *Enchondromata*, or tumours consisting of cartilage only, and *sarcomata* may in rare cases attack the external ear.

Tophi or Chalk-stones.

337. *Tophi*, or *Chalk-stones*, are the terms applied to the collections of urate of soda often found on the edge of the helix or in other parts of the auricle, in patients suffering from chronic gout.

The little concretions, which vary in size, are at first somewhat softish and of a doughy consistence; after a time they become solid and hard, forming small, irregular, whitish masses, which are plainly perceptible beneath the skin, and finally the skin may ulcerate over them, and there may be a discharge of the chalky matter, a slight cicatrix alone remaining to mark the seat of the former deposit. At other times active inflammation is excited in the neighbourhood of the deposit, and a small abscess forms, which, when it bursts, discharges pus mixed with particles of urate of soda.

Hypertrophy.

338. *Hypertrophy of the Auricle, or Lobule*, is sometimes produced as the result of chronic inflammatory changes affecting these parts.

CHAPTER XXIV

THE EAR

Affections of the External Meatus

Cerumen.

339. *Accumulation of Cerumen* in the external meatus is a very common cause of deafness, which may come on gradually, or perhaps more frequently shows itself somewhat suddenly. Tinnitus, often of a distressing character, more or less pain or uneasiness, and attacks of giddiness are often present; on examination with a speculum, the collection of wax can be readily detected, and the membrana tympani will be completely hidden from sight. On removing the accumulation, either with a pair of forceps or by syringing, the deafness, if due to this cause alone, will at once disappear, and the drumhead will at the same time be exposed to view. From constant pressure of the cerumen upon the membrana tympani, ulceration of this structure, followed in some cases by perforation, may be produced, giving rise to more or less permanent loss of hearing.

Parasites. "Aspergillus."

340. A peculiar kind of mould or vegetable fungus, the "*Aspergillus*," is sometimes met with in the external meatus, and in many cases the symptoms produced are very similar to those caused by accumulation of cerumen, viz. loss of hearing, tinnitus, fulness of the ear, and more or less aching pain; or inflammation of the meatus may be set up, accompanied by a serous

or sero-purulent discharge. To this condition the term "*otomycosis*" has been applied.

Foreign Bodies.

341. *Foreign bodies* are often passed into the external meatus, especially in the case of young children. If rough and angular, or tightly wedged in the canal, or pressing on the membrana tympani, their presence generally gives rise to more or less pain and loss of hearing, though unless the meatus is completely obstructed, deafness is not generally present; if allowed to remain severe inflammation may be excited, especially if the substance is rough or sharp; under these circumstances considerable swelling of the soft tissues lining the meatus will be produced, accompanied by a purulent discharge, and perforation of the membrana tympani often results. On examination with a speculum, the foreign body can generally be detected, obstructing from view the drum-head.

Otitis Externa Diffusa.

342. *Diffuse Inflammation of the External Meatus* may involve only the cutaneous tissues, or it may extend more deeply, implicating the periosteum of the osseous portion of the canal; it may also affect the membrana tympani itself. This condition is most frequently met with in children after scarlet fever or one of the exanthemata, or it may arise idiopathically as the result of exposure to cold, or simply in connection with a low state of health; in other cases it may be excited by the presence of a foreign body **(341)**.

It commences with a feeling of heat and uneasiness within the external meatus, the orifice of which soon becomes red, tender, and swollen; deafness and tinnitus are generally present; sooner or later a purulent discharge appears, and the pain, which has usually been a prominent symptom, then disappears. In some cases

perforation of the membrana tympani may be produced.

343. *Otitis Externa Circumscripta* is a localised inflammation of the soft tissues lining the external meatus, which in many cases leads to the formation of a small abscess or boil (furunculus). Otitis Externa Circumscripta. Abscess or Furuncle.

The symptoms are very similar to those attending the diffuse form of otitis externa (**342**), differing only in the fact that the inflammation is confined to a limited portion of the external auditory canal; in many cases a succession of small abscesses takes place, another forming as soon as the preceding one has healed up.

344. *Ulceration of the External Meatus* may remain as the result of otitis externa (**342**), or it may be due to syphilis or caries of the meatus; or be associated with perforation of the membrana tympani. Ulceration.

It is characterised by a more or less purulent discharge from the ear, and on examination of the parts the ulcerated surface will usually be evident.

345. *Caries of the Walls of the External Meatus* may be produced as the result of otitis externa (**342**), where the periosteum has become affected, or it may follow inflammation and disease of the middle ear. Caries.

It is characterised by the presence of a purulent discharge, and on examination with a probe, rough and carious bone will be detected.

346. The tumours or new growths most commonly found in the external meatus are exostoses (**347**), polypi (**349**), and sebaceous tumours (**348**). Tumours.

347. *Exostoses*, or small bony outgrowths, are not unfrequently met with in the external meatus, springing from any part of its osseous walls; they are covered by the cutaneous tissues of the canal and are usually unattended by any pain; when of considerable size Exostoses.

they may almost completely occlude the meatus, and in this way give rise to loss of hearing. These little growths, of which more than one may be present, may be congenital or the result of chronic inflammatory changes occurring in the middle or external ear; in some cases they appear to be of syphilitic origin, and are coincident with nodes in other situations.

Sebaceous Tumours.

348. *Sebaceous*, *Molluscous*, or *Cholesteatomatous Tumours*, or concretions due to accumulation of epidermic scales which have undergone fatty degeneration, are sometimes met with in the external meatus.

Polypi.

349. *Polypi* (**360**) are often found completely filling up the external meatus, and presenting themselves externally as exuberant growths of red or brownish colour. They are usually accompanied by a purulent discharge, and though they may be attached to the walls of the canal or membrana tympani, they will, in the majority of cases, be found to spring from the mucous membrane lining the interior of the tympanum, it being quite exceptional to find them attached to the walls of the external meatus with an imperforate membrana tympani.

Discharge of Pus. Otorrhœa.

350. A *Purulent Discharge* from the ear, *Otorrhœa*, may depend upon various causes.

It may be due to simple otitis, diffused (**342**), or circumscribed (**343**); otomycosis (**340**), ulceration of the walls of the canal (**344**), the presence of dead bone (**345**) or any irritating foreign body (**341**), or it may come from the middle ear, which is the seat of purulent catarrh (**358**), the pus finding its way externally through a perforation in the membrana tympani, and in many cases this condition will be found associated with the presence of a polypus (**349**).

Discharge of Blood.

351. A *Discharge of Blood* from the external meatus

Discharge of Blood.

is often seen in cases of fracture through the middle fossa of the base of the skull; in other cases it may be dependent on laceration of the external meatus, or upon simple rupture of the membrana tympani unassociated with any fracture.

In the former instance, as the blood comes from one of the large vascular channels at the base of the skull, the discharge is generally copious and long continued, and the hæmorrhage is often followed by the discharge of a watery fluid, quite clear or tinged with blood (**352**).

In the latter instance, the blood coming from the small vessels of the external meatus or membrana tympani is usually inconsiderable in quantity, and the hæmorrhage soon ceases.

Discharge of Watery Fluid.

352. A *Discharge of Watery Fluid*, either clear or tinged with blood, following immediately a severe injury to the head, or preceded by copious and long-continued hæmorrhage from the ear (**351**), is generally indicative of a fracture through the middle fossa of the base of the skull (**38**), whereby the prolongation of arachnoid which invests the seventh pair of nerves in the internal meatus is ruptured; in this way, the subarachnoid space being laid open, the cerebro-spinal fluid escapes externally through a laceration in the membrana tympani, which will always be found to co-exist.

An escape of cerebro-spinal fluid in this way must not be confounded with the simple serous discharge which may follow an injury, or be due to some inflammatory condition, affecting the lining membrane of the external meatus or tympanum, and independent of any fracture.

In the latter case there will be an absence of the usual symptoms of fractured base (**38**); the watery discharge does not immediately follow the receipt of

Discharge of Watery Fluids.

the injury, but comes on after some interval; nor is it preceded by copious and long-continued hæmorrhage. The fluid does not present the characteristics of cerebro-spinal fluid (*i. e.* contain sugar, an excess of sodium chloride, and only the slightest trace of albumen), but consists of a simple serous discharge, which contains more or less of inflammatory products.

CHAPTER XXV

THE EAR

Affections of the Membrana Tympani

353. *Myringitis*, or inflammation of the membrana tympani, is, as a rule, associated with some affection of the parts adjacent to it, and we generally find it co-existing with inflammation either of the external meatus (**342**) or middle ear (**357**); on examination with a speculum, the drum-head will be found to be red and vascular, having lost its natural lustre; severe pain will be present, with a feeling of fulness and throbbing in the ear, and tinnitus will usually be complained of by the patient. The inflammation may subside, or it may gradually pass into a chronic form, giving rise to permanent thickening of the membrane: in other cases ulceration and perforation may be produced. Myringitis.

354. *Perforation* of the membrana tympani is a very common affection; it may be produced as the result of injury (**355**), or it may be secondary to some inflammatory condition of the external meatus (**342**), middle ear (**357**), or membrana tympani itself (**353**). Perforation.

It is perhaps most commonly the result of that form of purulent inflammation of the middle ear (**357**), which so often follows scarlet fever or one of the other exanthemata.

The perforation may be of small size, and its detection is then often somewhat difficult, or it may involve

almost the whole surface of the drum-head. On examination with a speculum, the perforation, if of small size, will be usually evident as a minute opening, or it may be occupied by a drop of fluid, which sometimes exhibits distinct pulsation; if the patient be directed to close his mouth and nostrils, and then forcibly expire, bubbles of air will be often seen to pass through the opening.

When the perforation is of large size and almost the whole of the membrane is gone, the inner wall of the middle ear, with the remains of the ossicles, will be exposed to view, the mucous membrane lining its interior will present a red and granular appearance, and the promontory can often be detected as a rounded prominence.

Otorrhœa (**350**) is generally present, the pus being secreted by the lining membrane of the middle ear, and when this condition has continued for some time, polypi (**360**) not unfrequently make their appearance, growing from the interior of the tympanum and projecting through the perforation.

More or less deafness will be present, the loss of hearing varying considerably in different cases.

Rupture.

355. *Rupture* of the membrana tympani may be produced as the result of a penetrating wound from without; or it may accompany a fracture of the base of the skull (**38**); in other cases it may result from a blow on the ear, or from simple concussion, such as that produced by a loud report; or it may occur during fits of sneezing, coughing, blowing the nose, &c. The injury will be attended by more or less hæmorrhage (**351**); on examination with a speculum, the rent or laceration will be apparent. Deafness will be generally present, varying in degree, but as the rupture generally readily

heals, this will gradually pass away; in other cases, permanent loss of hearing may remain, as the result no doubt of some shock inflicted at the time of the injury upon the nervous structures of the internal ear.

Appearance in Catarrh of Middle Ear.

356. In chronic catarrh of the middle ear (**358**), the membrana tympani usually loses its natural lustre and transparency, becoming somewhat thickened and opaque; in many cases it becomes retracted and drawn in, so that its folds are very prominent and the outline of the malleus is rendered unusually distinct. It sometimes happens that a high degree of deafness is present without their being any evidence of an abnormal condition of the drum-head. In acute catarrh (**357**), on the other hand, when an accumulation of fluid takes place in the middle ear, the drum-head will be rendered unusually prominent and bulging.

CHAPTER XXVI

THE EAR

Affections of the Middle Ear

Acute Catarrh.

357. *Acute Inflammation of the Lining Membrane of the Tympanum* is generally accompanied by very severe pain or "ear-ache," often extending over the whole of the side of the head; more or less deafness and tinnitus are present. There is usually some exudation from the canal, and the membrana tympani, if examined with a speculum (though this is often a difficult matter owing to the swollen and inflamed condition of the walls of the external meatus), will be found to be red and injected, and if suppuration takes place, unusually prominent and bulging.

Abscess.

The affection may terminate in resolution and recovery, lapse into a chronic condition, or go on to suppuration and the formation of an *abscess in the middle ear*, which, if left, will probably burst through the membrana tympani, producing a perforation of that structure; or much more rarely the pus may make its way into the pharynx along the Eustachian tube; the spontaneous rupture of the drum-head and escape of the pus s usually followed by relief to the pain and other symptoms.

This condition may arise idiopathically, or as the result of cold, but it is most commonly met with in

children in the course of one of the exanthemata, and more especially in connection with scarlet fever, owing to the spread of inflammation along the Eustachian tube from the pharynx.

When occurring in children its course is often very insidious, or perhaps more often the symptoms are altogether overlooked, for it generally happens that the pus has made its way through the membrana tympani before the case comes under observation.

358. *Chronic Catarrh of the Middle Ear* is one of the most frequent and obstinate causes of deafness. Chronic Catarrh.

It may come on as the result of the acute disease, or gradually and insidiously without any apparent cause. In many cases it is associated with obstruction of the Eustachian tube, the result of thickening and relaxation of the mucous membrane about its orifice and lining its interior (**170**).

Accumulations of mucus, fluid in the earlier stage, somewhat inspissated in the later, often occur in the middle ear, and owing to the obstruction to the entrance of air into its interior through the Eustachian tube, the membrana tympani becomes in many cases retracted and more drawn in than is normally the case (**356**).

Owing to the interference with the conduction of sound through the middle ear, deafness is produced, accompanied by more or less tinnitus, often of a very distressing character.

The *chronic purulent catarrh of the middle ear* is generally the sequel of the acute affection, where perforation of the membrana tympani has taken place ; it is characterised by a purulent discharge (**350**) from the external meatus, and when it has continued for some time is often associated with the presence of a polypus (**360**).

Eustachian Obstruction. "Throat Deafness."

358 *a*. Inasmuch as it is the function of the Eustachian tube, by admitting air from the pharynx into the interior of the tympanum, to maintain an equal atmospheric pressure upon the two surfaces of the membrana tympani, it follows that in obstruction of this tube from any cause, owing to absorption of air in the tympanum, the atmospheric pressure on the outer surface of the drum-head will be greater than that on its inner aspect.

In consequence, the inward curvature of the drum-head is increased, and with it the chain of ossicula are forced somewhat inwards, so that undue pressure is exerted by the base of the stapes through the fenestra ovalis upon the perilymph which surrounds the membranous labyrinth; the result of this is that the vibrations of air (by which sound is produced), falling upon the membrana tympani, do not produce the same effect upon the internal ear, as in cases when the normal equilibrium is preserved. Hence deafness is caused as the result of obstruction of the Eustachian tube, so-called "throat deafness." Eustachian obstruction may be due to several causes, *e.g.:*

Simple catarrh of the mucous membrane lining the tube, the result in many cases of extension of inflammation from the throat.

Thickening and hypertrophy of the mucous membrane about the faucial opening of the tube, a condition which is in many instances associated with hypertrophy of the tonsils.

Pharyngeal tumours; naso-pharyngeal polypi; adenoid vegetations in the naso-pharynx; constriction or stricture of the tube itself; closure by a plug of inspissated mucus, foreign bodies, &c.

In cases where deafness is simply due to this cause,

Eustachian Obstruction.

viz. Eustachian obstruction, and where the condition of the middle ear is in other respects normal, hearing will at once be restored (though often only temporarily) if, on inflating the tympanum by Valsalva's or Politzer's method, or by the Eustachian catheter,* the atmospheric pressure upon the two surfaces of the membrana tympani is rendered equal.

Complications of Suppuration in the Middle Ear.

359. Owing to the anatomical relations of the middle ear, viz. its communication with the mastoid cells on the one hand, and its close connection with the

* *Valsalva's method* consists in the patient holding his nose, and forcing air by powerful expiration into the middle ear while the mouth is closed.

Politzer's method depends upon the fact that during the act of deglutition the opposed sides of the faucial orifice of the Eustachian tube are drawn apart by the palate muscles.

The patient takes some water in his mouth to be swallowed at a given signal; the nozzle of a Politzer's air-bag is passed about half an inch up the nostril; both nostrils are then compressed upon the nozzle by means of the thumb and forefinger of the operator's left hand; during the swallowing of the water, which has to be performed at the direction of the operator, the latter with his right hand forcibly compresses the air-bag.

The result of this is that air is forcibly driven into the nasal fossæ; at this moment (*i.e.* during deglutition), the upper part of the pharynx being shut off from the lower, the nostrils being closed, and the orifice of the Eustachian tube being patent, the air compressed in the nasal cavity, being prevented from escaping in any other direction, passes (unless it is unable to overcome the obstruction) through the Eustachian tube into the interior of the tympanum.

Catheterism of Eustachian tube.—In cases where the obstruction is so severe as not to yield to other methods (viz. Valsalva's or Politzer's), it may be necessary to catheterise the Eustachian tube, *i.e.* pass the Eustachian catheter, and then send a stream of air along it, blowing through it with the mouth or using a Politzer's bag.

Complications of Suppuration in the Middle Ear.

cranial cavity on the other, serious complications may occur in cases of suppuration in the middle ear, viz.:

1. *Caries* of the thin septum of bone which forms the roof of the tympanum and separates it from the cranial cavity may at any time occur, and, as a consequence, *meningitis*, or *cerebral abscess*, may be produced.

2. The same effects may be produced as the result of extension of disease to the internal ear, and thence through the internal auditory canal to the interior of the cranial cavity.

3. *Suppuration in the mastoid cells, and caries* or *necrosis of their walls* (311) is very liable to be produced as the result of extension of inflammation from the tympanum into their interior; and owing to the fact that the mastoid veins open directly into the lateral sinus, absorption of inflammatory products is very likely to take place, and as a consequence *septicæmia* or *pyæmia* may be produced.

4. *Polypi* (360) often appear when the purulent discharge has continued for some time, and by blocking up the external meatus, and in this way obstructing the free discharge of pus from the middle ear, they may indirectly assist in producing any of the above complications.

Polypi.

360. *Aural Polypi* almost invariably spring from the mucous membrane lining the middle ear, and they are generally found in cases where a purulent discharge has been in existence for some time, growing outwards through a perforation in the membrana tympani, which is usually found to be present.

The growth may be of small size, just showing itself through the opening in the membrane, or it may appear

Polypi.

externally, projecting from the external meatus as an irregular mass of a reddish colour.

It appears to originate in an excessive growth of the granulation tissue which is generally found to line the middle ear in cases of chronic purulent catarrh, for it is by a subsequent development of the granulation tissue into fibrous or fibro-cellular tissue that the little tumour, or polypoid growth, is eventually produced.

A polypus is usually accompanied by a purulent discharge from the external meatus, and deafness is generally present, for independently of the condition of the middle ear which usually co-exists, the polypus will itself mechanically interrupt the passage of sound to the labyrinth. Total deafness is not, however, usually present, unless the auditory canal is completely occluded.

In cases where the external meatus becomes completely blocked up, the polypus may, by preventing the free discharge of pus, induce purulent absorption, or meningitis, or cerebral abscess may be produced (**359**).

Disease of Mas-Cells.

361. *Inflammation of the Membrane lining the Mastoid Cells*, in many cases going on to suppuration, and leading to caries or necrosis of their bony walls, is not uncommonly met with in cases of disease of the middle ear (**358**). This condition is characterised by pain and tenderness over the mastoid process, with more or less redness and swelling behind the ear. If suppuration occurs, the pus may make its way internally through the inner wall of the mastoid cavity into the cavity of the skull, a result which is often followed by fatal consequences; or it may continue to discharge through the middle ear and external meatus; or, making its way externally through the outer wall of the mastoid cells, an abscess may form behind the ear (**14**), and

Disease of Mastoid Cells.

when this has burst and discharged its contents, a sinus will be left leading down to carious or necrosed bone, portions of which may, from time to time, be discharged.

In other cases meningitis may be excited, or thrombosis occurring in the lateral sinus into which the mastoid veins open, embolism and death from pyæmia may be produced.

CHAPTER XXVII

THE EAR

Affections of the Internal Ear

Nervous Deafness.

362. *Nervous Deafness*, viz. loss of hearing depending upon some abnormal condition of the receptive as opposed to the conducting media of the ear may be due to affections of the internal ear, auditory nerve, or brain itself.

This condition may depend therefore on various causes, *e.g.:*

Hyperæmia or inflammation of the labyrinth; hæmorrhage into its interior; Menière's disease (**365**).

Affections of the labyrinth secondary to disease of the middle ear.

Severe concussion of the brain.

Intra-cranial tumours pressing upon, or implicating, the auditory nerve.

Lesions at the base of the brain involving the auditory nerve or internal ear.

Meningitis.

Congenital syphilis (**363**).

The loss of hearing dependent upon any of these causes is often complete, and is generally accompanied by tinnitus, and in many cases by attacks of vertigo coming on from time to time.

Deafness in Congenital Syphilis.

363. Children the subjects of congenital syphilis very

Deafness in Congenital Syphilis.

frequently develop symptoms of deafness between the ages of five and fifteen years. The loss of hearing, which in the majority of cases affects both ears, is, as a general rule, somewhat rapidly developed; as it is usually attended by tinnitus, often of a severe character, and as there is generally an entire absence of any evidence of disease in the conducting media of the ear, this condition is believed to depend upon some morbid condition of the nervous or receptive apparatus of the organ of hearing.

The subjects of this affection will generally present other evidences of the constitutional disease (**60**).

Implication of Internal Ear in Fractured Base of Skull.

364. Fractures through the middle fossa of the base of the skull, implicating the bony labyrinth and causing rupture of the membrana tympani, are often accompanied by a discharge of blood (**351**) or of serous fluid (**352**) from the external meatus.

Menière's Disease.

365. *Menière's Disease*, or "*Labyrinthine Vertigo*," is the term applied to a peculiar affection supposed to depend upon some morbid condition affecting solely and primarily the internal ear (labyrinth or semicircular canals).

As a primary affection, it is characterised by sudden accession of deafness, rapidly becoming complete, in a person whose hearing has been previously normal, accompanied by tinnitus, vertigo, nausea, vomiting, faintness, cold sweats, unsteadiness of gait or complete inability to walk. At the same time, the mind remains entirely clear, the intellect being unaffected.

Coming on suddenly and without any previous evidence of disease, this condition is believed to depend upon an inflammatory affection of the internal ear, accompanied either by a hæmorrhagic or a serous exudation into its interior, in some cases of traumatic

origin, in others due to the giving way of degenerated blood-vessels.

In many cases, however, a similar condition is, in reality, secondary to some pre-existing disease in the middle ear, symptoms of which will have been present, and evidence of which will be detected on careful examination.

CHAPTER XXVIII

THE EAR

Diagnosis of Cause and Seat of Deafness

Diagnosis of Cause and Seat of Deafness.

In diagnosing the cause and seat of deafness, whether it is due to some morbid condition of the nervous (internal ear) or conducting apparatus (external meatus and tympanum) of the ear, much information will be gained from the history of the case and the symptoms which are present (otorrhœa, &c.).

1. History and Symptoms.

2. Examination with Speculum.

On examination with the speculum, the presence of cerumen, foreign bodies, polypi, &c., and the various affections of the external meatus, membrana tympani, and middle ear, already described (**339—361**), can generally be detected.

3. Examination of Throat.

In all cases the throat should be carefully examined, for many cases of deafness, especially in children, are due to thickening and a relaxed condition of the mucous membrane about the orifice of the Eustachian tube, causing obstruction of it (**170—358**).

4. Tuning-fork

Independently, however, of the history and symptoms which are present, much information can be gained by the use of the tuning-fork.*

* "Thus, let a vibrating tuning-fork be placed on the top of the head of a person with good hearing; after it has ceased to be heard in that position, if it be placed at a little distance from the external ear, it will be heard quite plainly; showing that sonorous vibrations make a greater impression on the auditory nerve when

Diagnosis of Cause and Seat of Deafness.

"Suppose the meatus to be closed with cerumen, or the tympanum to be obstructed with morbid products, the result of catarrh, the same effect will follow; and in the case of a patient with the auditory nerve unaffected, he will hear the tuning-fork more loudly on the side which is deaf from these causes, as either interfere with the outward passage of sound.

"A person in whom the functions of one or both auditory nerves are impaired will hear the tuning-fork (on the vertex) less loudly than he should do in the one or in both ears, and in severe cases will not hear it at all.

"It follows that, if one ear only be deaf, the tuning-fork will be heard better on this side if the disease is in the middle ear, and worse if it be in the labyrinth."

5. Inflation of Tympanum.

In cases where deafness is simply due to Eustachian obstruction (viz. catarrhal thickening of the mucous membrane about its orifice or lining its interior, closure by a plug of inspissated mucus, &c.), and where the affection has not been so long neglected that serious changes have taken place in the tympanum, the loss of hearing will often readily disappear (though in many cases only temporarily) on inflating the middle ear by

they are transmitted through the conducting apparatus than through the cranial bones.

"Again, if the tuning-fork be placed on the vertex, and the external auditory meatus on one side be closed, the sound will be heard more intensely on this side than on the other.

"This is also true in respect of the voice of the person on whom the experiment is being made, and in both cases is due to the fact that when the meatus is closed, the waves of sound in their passage out from the tympanum through the meatus are reflected again and again, and therefore their effect on the auditory nerves becomes intensified" (Dalby, 'Diseases of the Ear').

Diagnosis of Cause and Seat of Deafness.

one of the different methods, *e. g.* Politzer's, Valsalva's, or by means of the Eustachian catheter. (Note, p. 211.)

6. Tinnitus.

Tinnitus is always an important symptom in making a diagnosis as to the cause of deafness, for it is present in a great variety of affections, alike of the external, middle, and internal ear.

"Any condition which produces pressure on the labyrinth or tympanic membrane may give rise to this symptom. A piece of cerumen lying in contact with the membrane is a familiar example of one, and some cases of Eustachian obstruction of the other.

"In this latter instance, the pressure of air on the external surface of the membrane being greater than on the internal, the membrane is retracted, in its turn the handle of the malleus is drawn inwards, and the stapes in this way is unduly pressed on the fenestra ovalis.

"When the cerumen is removed in the one case, and the tympanum inflated in the other, in the immediate disappearance of tinnitus we recognise cause and effect, and are able to explain the phenomenon.

"If in cases of catarrh of the middle ear the tinnitus does not disappear after inflation of the tympanum, it is in all probability due either to a partial or complete anchylosis in some part of the chain of ossicles, or else is dependent on causes situated in the labyrinth.

"As a rule, when it is dependent on pressure due either to disease of the middle ear, to impacted cerumen, or foreign bodies in the meatus, it is not of that aggravated character which it assumes when its origin must be sought for in the deeper structure.

"With persons in whom there is no evidence whatever of catarrh, either from the history or from careful examination of the middle ear, in whom the deafness

has slowly come on and advanced to a high degree, tinnitus is a very common symptom; also in those cases of extreme and total deafness which are met with in the subjects of inherited syphilis; .... it is obvious that in such cases it is of nervous origin" (Dalby, 'Diseases of the Ear').

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